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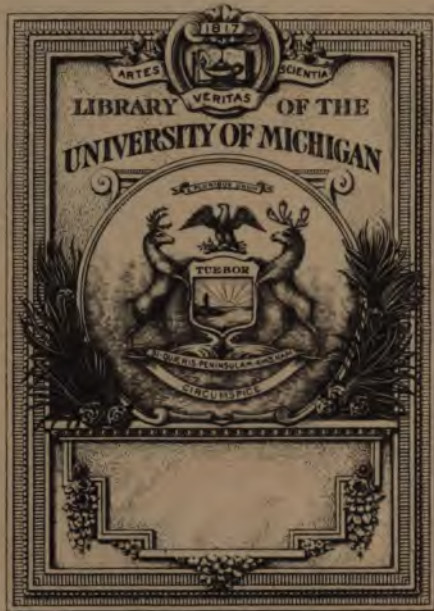
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Dr. G. K. Johnson

E. H. Johnson

Dr. E. H. Johnson.



ANNALS
OF
MILITARY AND NAVAL SURGERY
AND
TROPICAL MEDICINE AND HYGIENE:

BEING
In Annual Retrospect
EMBRACING THE EXPERIENCE OF THE MEDICAL OFFICERS
OF HER MAJESTY'S ARMIES AND FLEETS
IN ALL PARTS OF THE WORLD.

VOL. I.
FOR THE YEAR 1863.



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The Editor requests that Books and Papers for notice be sent (carriage free) to MESSRS. JOHN CHURCHILL AND SONS, New Burlington Street, London.

Gift
Dr. H. K. Johnson
7-7-30

PREFACE.

THE object of this Work is to comprise in one portable volume a retrospective history of Military and Naval Medicine and Surgery during each year, carefully noting every fact and opinion of importance, and thus fostering a useful *esprit de corps* and awaking and stimulating inquiry.

The "Annals" will not interfere with any existing publication, but aims at filling an unoccupied place in our Medical Literature; for the Naval and Military Services have become, to a certain extent, a speciality of our profession, not only as respects many questions in Medicine and Surgery, but in the wide field of preventive medicine and the economy of Armies in camp and in garrison. Bearing on these important subjects there is yearly published a mass of information which never meets the eye of officers serving on remote foreign stations, being scattered in bulky official papers, and in a variety of books and periodicals at home and abroad. To select, to abridge and arrange these valuable materials is the task which the Editor, during a period of sick leave, has undertaken, in the hope that the compilation will form an accessible storehouse of departmental investigation, useful to his professional brethren, and well worthy of the attention of the soldier, the sailor, and the statesman.

A distinct part has been devoted to each station of the Army and Navy; an arrangement which seemed the most natural and

convenient, as it is the one adopted in the Medical Blue Books, and has the advantage of showing separately the health-history of each command.

Instead of condensed abstracts or brief summaries of papers, it has been deemed best to give rather selected passages or extracts, by which authors are allowed, as it were, to speak for themselves; while papers of a practical aim and bias are given as much *in extenso* as the limits would admit. It may be safely affirmed that this volume presents ample testimony to the scientific value and practical utility of the labours of the Medical Staff in many distant lands and on many trying occasions; and if the attempt now made to centralize their varied experience should meet with encouragement, the work will be continued and no efforts spared to improve it.

It may be here stated that the Statistical, Sanitary, and Medical Report on the Health of the Army for 1861, and that on the Health of the Navy for 1860, quoted in these pages, are the latest issued, the one having been published in October, and the other in November, 1863.

London, February 20, 1864.

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ANNALS

OF

MILITARY AND NAVAL SURGERY,

ETC.

PART I.

HOME STATION.

ART. I.—On the Health of the Troops serving in the United Kingdom in 1861.

Sickness and Mortality.

THE weekly sick returns of the troops serving throughout the United Kingdom in 1861, show the average strength of non-commissioned officers and men from the 29th of December, 1860, to the 27th December, 1861, inclusive, to have been 88,955, the admissions into hospital among them to have been 91,220, the deaths from all causes, both in and out of hospital, 822, and the average number constantly sick, 4852. Of the deaths, 138 occurred when the men were absent from their corps. These numbers give the following proportions per 1000 of mean strength, and the results for 1860 have been added to the Table for the purpose of comparison :—

	Ratio per 1000 of Mean Strength.		
	Admitted into Hospital.	Died.	Constantly Sick.
1861	1,025	9·24	54·54
1860	1,053	9·95	54·72

Thus it appears that, in 1861, there has been a slight reduction in all these particulars. The following Table shows the number of admissions and deaths occasioned by each of the principal classes of diseases, and their relative proportion in 1860 :—

Orders.	Average Strength, 88,955.	Admitted into Hospital.	Died.			Ratio per 1000 of Mean Strength.				
			With the Regiment.	Absent from the Regiment.	Total.	1861.		1860.		
						Admitted.	Died.	Admitted.	Died.	
Class I.										
1	Miasmatic Diseases	19,674	75	12	87	221·2	·98	246·2	1·23	
2	Enthetic "	31,476	12	2	14	353·8	·16	369·0	·08	
3	Dietic "	629	3	...	3	7·1	·03	5·5	·10	
4	Parasitic "	3,122	...	...	...	35·1	...	30·2	·02
Class II.										
1	Diathetic Diseases	211	9	5	14	2·4	·16	1·8	·12	
2	Tubercular "	1,665	237	60	297	18·7	3·34	17·8	3·47	
Class III.										
Diseases of the—										
1	Nervous system	1,770	61	9	70	19·9	·79	18·8	·62	
2	Circulatory "	916	61	9	70	10·3	·79	7·5	·72	
3	Respiratory "	8,731	113	15	128	98·2	1·44	106·5	1·77	
4	Digestive "	3,465	33	8	41	38·9	·45	36·0	·51	
5	Urinary "	270	7	1	8	3·	·09	2·7	·14	
6	Reproductive "	664	...	...	...	7·5	...	4·9	...
7	Locomotive "	318	...	...	...	3·6	...	3·0	·03
8	Integumentary,,	10,669	3	3	6	119·9	·07	118·1	·14	
Class IV.										
4	Diseases of Nutrition.	187	3	1	4	2·1	·04	1·0	·03	
Class V.										
1	Accidents	7,118	53	8	61	80·	·68	78·5	·60	
3	Homicide	4	2	...	2	} ·1 {	·02	} ·2 {	·02	
4	Suicide	9	12	2	14		·16		·34	
5	Execution . . . .	...	...	3	3		·03		...
6	Corporal Punishment	181	...	...	...	2·1	...	1·9	...
	Not specified . . .	141	...	...	...	1·6	...	3·1	...
Total . . .		91,220	684	138	822	1025·5	9·24	1052·7	9	

This Table shows the reduction in the admissions to have chiefly in the classes of miasmatic and venereal diseases, and slight extent also in those of the respiratory system; but the facts of the great prevalence of venereal and high mortality tubercular diseases remain unchanged the former having more than one-third of all the admissions, and the latter about third of the total deaths.

Paroxysmal Fevers have been much lower in the dockyard

arsenals than in 1860; a result which seems to justify the opinion then expressed, that the ratio in that year was "unusually high at Woolwich, in consequence of a considerable number of men who had taken their discharge from the Honourable East India Company's Army, having, on their return to England, enlisted into the Artillery."

ENTHETIC DISEASES.—The admissions on account of venereal diseases continue very high, exceeding in number one-third of the strength. There has been a slight increase in the proportion in the seaport towns, camps, and at London and Windsor, and a decrease in all the other groups of stations, but particularly at Dublin, the dockyards and arsenals, and the "remaining stations."

The following Table shows the admissions per 1000 of mean strength by these diseases at each of the large stations, compared with the results of 1860:—

	1861.	1860.		1861.	1860.
Manchester	487	289	Cork	354	346
Portsmouth	485	503	Chatham and Sheerness	328	351
Plymouth and Devonport	470	440	Shorncliffe	325	327
Belfast	469	413	Birr	309	268
Colchester	415	430	Parkhurst, Isle of Wight	295	304
Dover	401	383	Pembroke Dock	261	228
Woolwich	399	473	Edinburgh	260	300
Canterbury	397	290	Preston	209	411
Winchester	380	408	Fermoy	195	268
The Curragh	364	373	London and Windsor—		
Dublin	363	409	Household Cavalry	135	97
Aldershot	361	339	Foot Guards	328	255
Limerick	360	401			

The admissions into hospital by this class of diseases have amounted to 354 per 1000 of the strength. The number constantly in hospital with them has been 23·45 per 1000, and the average duration of the cases 24·19 days. The inefficiency caused by it has therefore been equal to the loss of the services of every soldier at home for 8·56 days, being a trifle under the amount in the preceding year.

On dividing the venereal diseases into two groups, syphilitic and gonorrhœal, the following results are obtained as to their relative prevalence and duration:—

	Ratio per 1000.		Average Duration of Cases.
	Admitted.	Constantly Sick.	
Syphilitic	209·8	15·95	Days. 27·81
Gonorrhœal	144·	7·50	19·

Taking the principal diseases in each of these two groups separately, the average period in hospital is found to be—of primary syphilis, 25·70 days; of secondary, 27·73 days; of bubo, 35·35 days; of gonorrhœa, 18·77 days; of swelled testicle, 17·80 days; and of stricture of the urethra, 29·90 days.

Mortality.

As in former Reports, for the sake of accuracy of comparison, the ratio of mortality has been calculated in the following Table on the same proportion of men at different periods of life in each arm, the numbers serving in the Dragoon Guards and Dragoons in 1861 being taken as the standard, and the results of previous years being reduced to it:—

Ratio of Deaths per 1000 living in . . .	1861.	1859-60.	1860.
Household Cavalry	5·76	4·73	...
Dragoon Guards and Dragoons	6·51	7·33	...
Royal Artillery	6·97	...	9·63
Military Train	9·33	8·29	...
Foot Guards	7·76	9·07	...
Infantry Regiments	7·36	9·02	...
Cavalry Depôts	7·00	...	10·01
Depôt Brigade Royal Artillery	13·83	...	15·23
Depôt Battalions	11·38	14·70	...
Civil Male Population of healthy districts } in England and Wales	7·41		
Ditto ditto of England and Wales ge- } nerally	8·85		

This shows the mortality to have been lower than in the most healthy districts of England in the Cavalry, Artillery, and Infantry Regiments, and higher in the Military Train, Foot Guards, Depôt Brigade of Artillery, and the Depôt Battalions. But it must not be forgotten that this is wholly irrespective of the diseased lives eliminated from the ranks of the Army by the process of invaliding.

ENTHETIC DISEASES.—Except in the Household Cavalry and Foot Guards, in which the admissions slightly exceed the ratio in 1861, these diseases have been less prevalent in all the arms. The ir-
liding on account of venereal has been 1·85 per 1000 of the strength.

TUBERCULAR DISEASES.—The mortality by these has been high in the Household Cavalry; but this can only be considered as an accidental fluctuation arising from the small number under observation. Omitting these troops and the depôts, in which the results are greatly affected by the number of men sent home on change of climate from abroad, the proportion of deaths by tubercular diseases is remarkable for its uniformity in all the arms, lying between 2·41 per 1000 in the Cavalry of the Line and the Foot Guards, and 2·75 in the Military Train. But it is in dise-

this class that the effect of invaliding in reducing the mortality must be most strikingly seen. In estimating their influence, therefore, on the different arms, a correct conclusion can only be arrived at by combining the mortality and invaliding. This has, accordingly, been done in the following Table:—

	Ratio of Decrease by Deaths and Invaliding from Tubercular Diseases per 1000 of Mean Strength.				
	Cavalry of the Line	Royal Artillery.	Military Train.	Foot Guards.	Infantry Regiments.
1861	12·18	8·41	13·75	18·07	8·68
1860	8·75	8·29	9·66	15·68	6·88

This shows the total loss to the service by these diseases to have been twice as great in the Foot Guards as in the Artillery or Infantry of the Line; and compared with the Cavalry and Military Train, to have been in the proportion of three to two, a result which confirms the remark already made as to the more serious character of the diseases which occasioned the invaliding in the Guards.

On the Extent of Invaliding.

The following Table shows the number of men discharged by invaliding in 1861 from the Army serving at home, and also the number from the Corps included in the preceding remarks on the health of the different arms:—

	Troops generally.	Household Cavalry.	Dragoon Guards and Dragoons.	Royal Artillery (including the Depot Brigade).	Military Train.	Foot Guards.	Infantry Regiments.	Depôt Battalions.
Strength	88,955	1,219	9,528	13,335	1,817	5,811	26,719	21,970
1861 { Number discharged as Invalids .	4,554	10	448	281	70	164	935	1,742
Ratio per 1000	51·19	8·2	47·	21·1	38·5	28·2	35·	72·3
1859-60, " "	...	11·1	18·9	20·2*	21·7*	22·2	17·2	21·6*

During the year 2053 soldiers and 4395 recruits were vaccinated with the following results:—

* The ratio for 1860 only.

Class.	Number.	Results.	In those who bore marks of previous Smallpox.	In those who bore good marks of previous Vaccination.	In those who bore doubtful marks of previous Vaccination.	In those who bore no marks of previous Vaccination or Smallpox.	Total.
Soldiers not Recruits	2,053	A perfect Vaccine pustule . . . A modified ditto . A failure in . . . Total . . .	451·4 159·6 389· 1000·	484·6 157·4 358· 1000·	236·8 505·3 257·9 1000·	326· 277·5 396·5 1000·	430·6 218·7 350·7 1000·
Recruits.	1,395	A perfect Vaccine pustule . . . A modified ditto . A failure in . . . Total . . .	345·5 266·8 387·7 1000·	407·3 240·8 351·9 1000·	461·3 301·3 237·4 1000·	527·3 202·6 270·1 1000·	415·5 242·5 342· 1000·

These results show a smaller proportion of perfect vaccine pustules, and a larger ratio of failures, especially among the recruits, than the returns of the preceding year.

During the course of the year, in an average force of 88,955 men, there were 51 cases of smallpox reported, of which four died: they are all stated to have occurred in men bearing marks of vaccination.

On the Recruiting for the Army.

The number of recruits examined at the head-quarters of the recruiting districts amounted to 12,191, of whom 4600 were found unfit for service. The number of primary inspections was 7993, and of secondary 4198; and the rejections in each were 3605 and 995.

The relative number furnished by each country has been:—

	Of every 1000 Recruits.			
	England and Wales.	Scotland.	Ireland.	The Colonies and Foreign Countries.
1861 .	531	156	307	6
1860 .	566	107	321	6

Showing an increase in the proportion of enlistments of the natives of Scotland.

The extent of education among the recruits is shown in the following Table:—

Of every 1000 Recruits examined.	Unable to read or write.	Able to read only.	Able to read and write.
In English Districts . . .	271	55	674
In Scotch „	168	157	675
In Irish „	328	96	576
Total . .	264	79	657

These results correspond pretty nearly with those given in the Report for 1860. The chief difference is an increase in the number wholly uneducated in the English districts, and in the proportion able to write among the Irish recruits.

DIMINISHED DEATH-RATE IN THE ARMY AT HOME.—From 1830 to 1836 the annual death-rate among the troops in the United Kingdom was 14 per 1000; in the years 1859–60 it was reduced to 5. During the same periods, the death-rate in the Cavalry of the Line was reduced from 15 to 6; in the Royal Artillery, from 15 to 7; in the Foot Guards, from 21 to 9; in the Infantry of the Line, from 17 to 8.

DIMINISHED DEATH-RATE IN THE ARMY IN VARIOUS STATIONS.—Dr. Franklyn, Surgeon, 10th Regiment, gives the following comparison (from published sources) between the health of the Army before and after the Crimean war. Commencing with the West Indies, one of the most unhealthy stations for white troops, we find, by statistics compiled up to 1860, that in Jamaica the mortality ran as high as 260 in 1000 of strength per annum, or a British regiment was entirely destroyed in about three and a half years. At a later period, the mean of four healthy years gave in the same colony 67 deaths in 1000 of strength per annum. Up to 1855, it was as high as 60·8 per 1000 of strength; it is now reduced to 20·4 per 1000. In Trinidad, the mortality was 106·3 per 1000 of strength. A regiment was destroyed in seven years. In 1859, with an epidemic of yellow fever, it was reduced to 89 per 1000 of strength. In 1860, there was not a single death. In Barbadoes, the mortality was 58·8 per 1000; it is now 6·36 per 1000. In St. Lucia, the mortality was 122·8 per 1000; in 1859, not one death occurred; in 1860, only one occurred. In British Guiana, the mortality was 74 per 1000; in 1859, it fell to 13·9 per 1000; in 1860, it went down to 6·6 per 1000. In Canada, the mortality was 16·1 per 1000; it is now 10·1 per 1000, including invalids who may die at home. In Nova Scotia, the mortality was 15·1 per 1000; now it is 7·23 per 1000. In Newfoundland, the mortality was 11 per 1000; it is now 4·8 per 1000. In Bermuda, the mortality was 28 per 1000; now it is 8·55 per 1000. In Gibraltar, the mortality was 11·1 per 1000; now it is 7·18 per 1000. In Malta, it was 18·2 per 1000 men, and sometimes went as high as 40·3 per 1000; now it is reduced to 10·5 per 1000. In Ionia, the mortality was 15·5 per 1000; now it is only 7·08 per 1000. In the Mauritius, 17 per 1000 is about the average mortality. In Ceylon,

about 19 per 1000. In India (Bengal), the Medical Department has not been assisted sufficiently yet, nor have the changes recommended been carried out; but all is progressing slowly towards a better state of things. In Australia, the mortality generally is 11 to 14 per 1000 men; in New Zealand, 13 per 1000.

ART. II.—*Hygiene of the Home Quarters of the Army.*

The Camp of Aldershot.

The salubrity of Aldershot as a position for troops continued without question, and the most ordinary averages as to sick in hospital prevailed generally throughout the seasons; whilst, in especial instances, one medical officer cites the fact of only 4 per cent. having been the mean ratio of total sick to well in his corps, and another, in tribute to the salutary influences which here combine to raise and maintain the health of the troops, reports the marked improvement in the general physical condition of his regiment after a change from a station of the western district, Devonport, to the more invigorating atmosphere of Aldershot.

The Reports, in aggregate, tend to show that in the permanent barracks the troops enjoyed ample averages of 800 to 1000 cubic feet per man, although in the huts more than three-fourths of the regulated measurement (the 400 cubic feet laid down by the Royal Sanitary Commission) was rarely afforded.

The duties at this camp, in their general influences, were in no wise detrimental to the health of the corps severally at any season of this year; although, in the training of the young soldiers, individual physical endurance may have on occasions been over-taxed, in having to keep position in the ranks throughout the longer and wider evolutions over country on the great field-days of instruction.

A range of five to seven and nine consecutive nights, per man, in bed to one on guard, as the Reports show, may be assumed to have had an important bearing in contributing to favourable results in the year's statistics of health in the camp.

The working of the Commissariat agency for the rations supplied to the troops continued to form an express subject of a general satisfaction.

The hospital accommodation underwent no important change or any material extension from the conditions detailed in the Report of the previous year, and no prevalence of disease necessitated resort to overcrowding in the wards at any time.

Five hundred and 600 cubic feet per patient formed, variously, the available averages of space in the ordinary hospital huts; generally 700 and 800 were afforded in the "New" huts; and in the permanent building termed the "Union" Hospital, the averages varied in regard of regiments, some corps obtaining an average amount of 1000 cubic feet a patient, others less than that by 200

and 300 cubic feet, thus according to the numbers of their respective sick-lists.

The *clothing* of troops when undergoing a camp life is always more especially a subject of great attention by the medical officers, whose very concurrent opinion in favour of flannel under-clothing is well confirmed in the following general allusion to the subject in a Report of a most experienced Inspecting Medical Officer of the Camp, Mr. Stewart:—

“I conceive the want of *flannel under-clothing* in infantry regiments to be a most serious defect, and one which, in my opinion, must tend greatly to the prevalence of chest complaints and consumption, the sources of so much inefficiency and final disability throughout the service. In India, flannel under-clothing is furnished to the soldier (cavalry and infantry) as a part of his kit, and as necessary to health. It can be no less so in the damp, variable climate of the United Kingdom; and if necessary also to the health and comfort of those in private life, it can be no less requisite in the case of the soldier, liable, from the nature of his duties, to be exposed to every vicissitude of the weather.”

The Camp of Shorncliffe.

The bath and ablution accommodation was sufficient for each regiment, and appeared to be freely made use of by the soldiers, who, at this station, moreover, enjoy the special advantage and facility of sea-bathing—a boon availed of by numbers at their own discretion, irrespectively of the two regulated days a week for general bathing parades.

The cooking for the troops continued to be effected by means of Grant's apparatus for each corps, and, as to facility and variety, came under satisfactory report; the diets were allowed to be prepared according to the varying wishes of the men.

For each regimental range of huts a fives'-court has now been provided, and these courts, with cricket, football, etc., have proved good sanitary resources in the many leisure hours of the infantry corps.

Of the Garrison Hospital, after its many altered arrangements and improvements, detailed in the Report issued last year, all is commendatory of its condition and comfort since.

Of the average annual strength of troops at Shorncliffe—4434 rank and file—the mean number of sick in the hospital wards was 210, and, relatively, the average monthly appropriation of cubic space amounted to the comparatively high ratio of 1000 feet to a patient.

Western District of England.

On the abstract health question of the year, the principal medical officer points out the circumstance, that of a total of admissions to hospital amounting to 4287, in an average annual strength of 3823, as many as 1667 were numbered of the venereal class alone, and,

very exceptional in ordinary experience, no fewer than 235 of itch. Thus, he observes, "diseases attributable to vice have far outnumbered those which arise from ordinary climatic causes; and next in frequency were those resulting from low associations on the part of the soldier."

The odium of prostitution has maintained its prominence here as at the other great seaport and garrison towns, and continues to involve not only the question of ruined constitution of individuals, but a weighty consideration to the State for non-effective duty men, and a burdened pension-list of invalided soldiers.

Correlatively with the foregoing vice, that of intemperance, as regards the garrison during this year, is adverted to by Dr. Gordon as having been comparatively modified; and he observes the fact of the much greater expense of spirituous liquors than at the generality of foreign stations, such being no doubt one chief cause of the proportionately small amount of drunkenness that appears in the returns to have come under notice; whilst another reason is instanced in the limited residue of daily pay at the soldier's disposal. From these two circumstances, therefore, the direct effect of intemperance in producing disease was thought to be very small; but, unfortunately, as he represents, the gain in this respect was far outweighed by the facilities and temptations for other immorality which beset the soldier at every turn in a garrison town.

The South-Western District of England.

An especial boon was conferred by the Government in the opening of a small, and so far extemporized, hospital for the sick wives and children of the garrison of Portsmouth. This embryo institution of the kind is situated intermediately to the Portsea and the Portsmouth Barracks, on the so-called "Milldam." A nurse had been appointed, and the establishment had been in order of occupation for about the last three months. The arrangement is only as a temporary measure, to meet the humane and pressing requirements of so large a garrison; it being the intention of the Government to build and organize a permanent female hospital for the station.

From the Regimental Sanitary Reports of the year, specially, are gleaned the following various points commented on at different stations.

In Portsmouth, Surgeon Perry, R.A., adverts emphatically to the prevalence of venereal diseases there, and bears testimony to the benefit and advantage of the legislative enactment at Malta in contrast of results. He writes: "Medical officers are unable to grapple with the evil unless police authorities aid in restriction upon the source whence it is derived; the only means whereby a great and really terrible evil may be lessened, if not abolished, and a better state of public health become the result. Vice is not legalized by its effects being carefully watched and checked; and hence, if the vocation is well known, the mischief arising from such a calling should be under police control as much as any nuisance affecting the public health."

In the yet rough and very rudimentary stage of the soldiers' culinary art, the cooking of soup (still the more general predilection of the men) engaged the attention of Dr. Alexander Smith, the Staff-Surgeon in charge at Winchester. The following is part of his memorandum on the subject:—

SOUP DIETS.

Ingredients or Diets.	One Diet.	Ten Diets.
Water	1 quart	7 quarts 1 pint
Meat	12 ounces	7 pounds 8 ounces
Barley	1½ "	15 "
Vegetables	4 "	2 " 8 "
Flour	½ "	2½ "

AMOUNT AND DESCRIPTION OF VEGETABLES FOR SOUP.

Vegetables.	Ingredients for every Ten Diets.
Carrots . .	14 ounces.
Turnips . .	{ 14 ounces, or 14 ounces cabbage, or 7 ounces of each, according to the season.
Onions . . .	6 ounces.
Parsley . . .	2 ounces.
Leeks	4 ounces, or celery 6 ounces, according to the season.

INSTRUCTIONS FOR PREPARING SOUP DIETS.

"1st. The barley for the soup must be steeped over-night in the quantity of water required for the number of diets.

"2nd. At 8.30 A.M. put into the boiler (previously carefully cleaned) the given quantity of water and barley, and the meat (which should be first washed); stir from time to time, to prevent the barley from burning. Wash the vegetables, and carefully cut them into very small pieces.

"3rd. At 10 A.M. reduce the fire by partially shutting the damper or opening the furnace-door, so as to cause the contents of the boiler to simmer slowly; carefully remove all the fat or scum which may have risen to the top, and then add the vegetables.

"4th. At 11 A.M. remove the meat from the boiler, and let the soup continue to boil slowly; mix the flour with cold water till a very thin and smooth paste is formed.

"5th. At 12.30 P.M. stir the paste of flour and water into the soup, replace the meat in the boiler, and let the whole boil for half an hour.

"At 1 P.M. it will be sufficiently cooked.

"ALEX. SMITH, M.D.,
"Staff-Surgeon.

"Winchester, 25th June, 1861."

Chatham Garrison and District.

Surgeon-Major Dr. Maclean, of the 1st *Dépôt* Battalion, in his Report alludes more particularly to the section under the head of drill, representing this, when practised to any length before their breakfast, as too much for growing lads; the old soldiers, he was further of opinion, should be spared from carrying their knapsacks on guards, etc. Both views were recommended, he states, by him to the authorities, and came to be adopted, with the most favourable results.

Woolwich Garrison, Shoeburyness, and Warley.

Shoeburyness.—Surgeon-Major Guy's (Royal Artillery) very comprehensive and satisfactory report on this station, states the new barracks to be built on the best principles; they are arranged in "blocks," each block being again subdivided into two houses with distinct entrances. Each house has two rooms on the ground-floor and two on the upper. The size of each room, two of whose walls communicate with the outer air, is such as, on the lower floor, with 12 occupants, to distribute 560 cubic feet to each, and on the upper to allow as much as 712 to every man of a similar complement. On the ground-floor of each house a cleansing room adjoins; and on the upper, a bath and ablution room, with a night urinal for the whole house, is provided. For each "block" a commodious kitchen with a good cooking range exists, and two small non-commissioned officers' quarters at each end of the block complete the distinct building.

In the returns only seven cases of ague are represented to have been admitted to hospital in this formerly endemic locality, and the now comparative immunity from the disease is ascribed to the drainage of the neighbouring lands being carried out; in addition to which circumstance, care was taken not to employ the men at practice after sunset or before sunrise.

North Britain.

Fort George.—This station was occupied by a small detachment, 116 in average strength, from the *dépôt* at Aberdeen, and the men had the full complement monthly of 600 cubic feet each in the barrack rooms. Of the above strength the average daily sick appears to have been five, to meet whose accommodation the ratio of 1500 cubic feet to each patient was made avail of.

Sundry drawbacks, in a sanitary respect, are represented as requiring remedy, more particularly that of a nuisance in the effluvia from latrines, etc., connected with the still existing old cesspit system, the drainage also being very imperfect, and, although frequently so represented, little having been as yet effected in the way of its improvement; in such respect the position of the fort may have presented some obstacles. The medical officer estimates the elevation at only about twelve feet over high-water mark—the site being on a "spit" of shore.

Ireland.

The views of the Inspector-General of Hospitals, Mr. Williams, with regard to many general and certain local requirements for the social and sanitary interests of the troops in Ireland, are to be gleaned from the following extracts of his Sanitary Report for the year under review :—

“The health of the troops in Ireland does not appear to have been affected during the past year by any particular cause. The troops have generally enjoyed good health, and the ratio of mortality of those who died in hospital is only $5\frac{1}{2}$; but, if the deaths of those who died out of hospital are added, the average will be 6·25 (nearly) per 1000 of mean strength.

“I have in my Inspection Reports suggested many things which I trust will be found calculated to improve still more the health of the troops, and I beg to mention the general requirements for nearly all stations, and also those recommended for particular barracks, all of which I hope have been included in the estimates for the next year, as I submitted them last April to the General commanding in Ireland for his approval, with a view to their being inserted in the annual estimates.

“1st. Quarters for married soldiers, which, if sanctioned, will liberate many barrack-rooms, and give the soldier an approximation to the space considered necessary for preserving him in health.

“2nd. Hospital accommodation for the sick women and children of soldiers.

“3rd. Day-rooms for the men.

“4th. Day-rooms for convalescents in hospital.

“5th. Gymnasias.

“6th. Covered racket-courts.

“7th. Covered skittle-alleys.

“8th. Drying-room to be attached to women's washhouses, and in hospitals, for airing clothes. An excellent specimen of the kind required is to be seen in Limerick Provost Establishment.

“9th. All cesspools to be entirely done away with.

“10th. Standing ash-pits to be abolished. Iron carts (numbers according to requirements of barracks) to be substituted, and cleared out every morning.”

ART. III.—*Health of the Navy for 1860.**Preliminary Observations.*

With reference to the past and present Reports on the health of the Navy, it is proper to mention that a high rate of sickness does not necessarily imply a high rate of mortality; in fact, the one bears but little relation to the other. Disease, for example, may have been generally rife throughout the force, but not of a fatal

character; while, on the other hand, malignant disease may have destroyed many lives without causing any great loss of service by sickness. The introduction of an infectious malady into a few ships on a station will sometimes more than quadruple the loss on that station, in the same manner as a shipwreck might increase the death-rate from drowning to an unusual extent. These losses can only be regarded as accidental and in excess of the normal mortality arising from ordinary and endemic causes. The one class of diseases are irregular and uncertain in their advent, but, generally speaking, in the naval service they may be avoided; the other class, arising from endemic causes, and causes inherent to mankind in all parts of the world, are more generally persistent; they do not entirely disappear for determinate periods, and are not so easily avoided or prevented. It is, therefore, of the utmost importance, if we wish to ascertain the influence of different regions and climates on the health of Europeans, to draw a line between diseases which are endemic or constitutional from those that arise from a contagious or an infectious poison. By the following returns it appears that nearly a sixth of the total mortality in the naval service for the year may be ascribed to infectious diseases.

Yellow fever is one of those maladies which occasionally breaks out with virulence, and rapidly destroys a great number of men in a short space of time; hitherto, however, it has been chiefly confined to a few intertropical regions; but it is not, as some suppose, endemic even in those places where it most prevails; whether it arises exclusively from an infectious virus, or from some other physical agent in connection with the soil or climate, is a question which has not yet been decided, though a belief in the former is rapidly gaining ground; but until the causes which give rise to endemic and epidemic diseases are better understood, there is little chance of our arriving at any satisfactory conclusion on the subject. Unfortunately there appears to be an aversion in the minds of many to acknowledge the infectious nature of yellow fever and cholera morbus, while there are others who admit that they may be infectious, but only in connection with other causes, which too frequently are assumed to exist in ships' holds; hence the supposed necessity for clearing out the holds when they make their appearance,—an operation which has never yet arrested their progress, though it may have increased their virulence.

The loss from yellow fever for the present year is still large, but there is reason to believe it would have been much greater had it not been for the judicious regulation established by the Commander-in-chief on the North American and West India station, which authorizes vessels to quit the tropics when the fever makes its appearance on board. The rapidity with which it disappeared in two of the vessels which ran to the northward was nothing more than what might have been expected; but with reference to Halifax, which has generally been selected as a refuge for ships of war with yellow fever on board, it is necessary to observe, that although it may prove to be perfectly safe during the greater part of the year, it is not so certain that the disease will cease during the hottest

part of the summer. This was practically tested in 1861, when the disease continued to extend amongst several ships' companies, and was even communicated to two of the crew of another ship who had not been in the West Indies, or on board any of the infected vessels; but they had come in contact while on shore with men who belonged to the ships in which the disease existed. The thermometer at the time had risen to 82° in the shade. It would, therefore, be advisable in future for vessels with yellow fever on board to make for some anchorage still further north than Halifax, during the summer months.

A. BRYSON, M.D., F.R.S.

*Admiralty, Somerset House,
October 28, 1863.*

Total Force.

The total mean force corrected for time in the Royal Navy in 1860, amounted to 64,025, while the total number of cases of disease and injury amounted to 90,329; of these, 2844 were invalided, and 938 died; the former being in the ratio of 44.4, and the latter of 14.7 per 1000 of mean force. The loss by invaliding is considerably in excess of the preceding year, but by death it is less.

The number of cases compared with the number of men were as follows:—on the Home station, 1.1 per man; on the Australian station, 1.3; on the Cape of Good Hope and south-east coast of America, 1.4; and in the Mediterranean and force irregularly employed, 1.5; in the Pacific, 1.7; and on the North American and West India and East India and China stations, 1.8; so that in the total force the number of cases of attacks averaged about 1.4 per man.

The average number of men daily sick on board ship and in hospital ranged from 39.8 on the Home to 72.5 per 1000 on the East India and China station,—a considerable reduction in both instances on the sick-rate of the preceding year. There is, however, an increase on the sick-rate on the North American and West India station, owing to the eruption of yellow fever in several vessels on the latter division of the station. There is also an increase in the ratio daily sick in the Mediterranean, which is to be ascribed to an unprecedented increase in the number of cases of bronchial disease in some of the larger ships. On the south-east coast of America, and in the force irregularly employed, there is a slight reduction of the sick-rate, while in the force in the Pacific and on the west coast of Africa it is nearly the same. On the Cape of Good Hope and the Australian station there is a slight increase, but on each it is below the mean rate in the entire force; this, as shown in the last column of the Table No. 2, amounted to 53.6 per 1000,—a reduction on the average sick-rate of the preceding year, equal to about six men in every thousand employed. It thus becomes obvious that, compared with the preceding year, there was, in consequence of a reduction in the aggregate amount of disease, a clear gain of about 350 men to the effective strength of the Navy.

As already stated, the total loss by invaliding amounted to 2844 officers and men, or at the rate of 44.4 to the 1000 of force,—39.6 for disease, and 4.8 for wounds and injuries. The loss by invaliding for several years has been greatest on the East India and China station, and the present year is no exception to the past; for although there is a slight decrease on the ratio of the preceding year, still the loss, namely, 615, or 72 per 1000, is high, compared with the ratio on other stations, or with the mean average of the entire force. The loss by invaliding on the Mediterranean station is also unusually high, namely, 988, or in the ratio of 69.5 per 1000. This however, as already stated, is to be ascribed entirely to the increase in the number of cases of disease of the respiratory organs in a few vessels of the squadron only. On all the other stations the number invalided was under the average ratio in the entire force. On the west coast of Africa there is a reduction to the extent of one-half, compared with the preceding year; but whether this was owing to a decrease in the force of climatic disease is doubtful. On the North American and West India station, the ratio invalided amounted to 36.0 per 1000, on the Pacific station to 35.5, on the Cape of Good Hope to 33.8, and in the Home force and force irregularly employed to 29.4 and 26.2 respectively. The total loss by invaliding was least of all on the Australian and south-east coast of America stations, being in the proportion of 23.4 on the former, and 24.0 per 1000 on the latter.

The loss by death from disease alone was greatest on the North American and West India station, where it amounted to 87, or in the ratio of 38.7 per 1000 of force; this, however, as previously stated, was entirely owing to the introduction of yellow fever into a few vessels, and not to any climatic cause or influence peculiar to the West Indian division of the station; for, deducting the loss from this intractable malady, the death-rate would be on a par with the average rate common to other healthy stations, when free from infectious epidemics. This is important, because it is highly necessary, with a view to the preservation of life, to separate the loss arising from endemic disease, and diseases common to mankind in all parts of the world, from the loss caused by infectious diseases, the ravages of which may generally be controlled or arrested by human interference. The loss by death from disease, namely, 214, or 25.1 per 1000, on the East India and China station is also high; but, with the exception of a few deaths from cholera and small-pox, the excess is principally to be ascribed to endemic diseases, or diseases peculiar to the station. On the west coast of Africa the death-rate, which was largely in excess on the preceding year, owing to an eruption of yellow fever in two vessels, is again reduced to about its normal standard, namely, 17.6 per 1000; for there were comparatively but few deaths from endemic fever, and only three from yellow fever, the lingering remains of last year's epidemic.

The death-rate on the remaining stations ranged from 5.3 to 8.8 per 1000, which does not exceed the death-rate amongst men of the same age in the civil walks of life in this country.

It may be observed that on the Pacific and Australian stations the deaths from external violence and drowning were in excess of the deaths from disease: this, on the former, arose from the loss of five men by the upsetting of a boat, and three by homicidal wounds, inflicted when the men were on shore; and on the latter by several deaths from wounds, received in action with the Maories in New Zealand. Were it not for these unavoidable and accidental losses, the death-rate would have been more in accordance with the rate in bygone years.

The number of men daily inefficient from disease and injury throughout the year amounted to 3436, or nearly a twentieth part of the total force, which may be said to represent a reduction in the effective strength of the Navy equal to about four or five ships of the line.

The total loss in the naval service for the year 1860 may therefore be thus summarily stated:—

Number of men daily inefficient from disease and injury	3,436
Invalided	2,844
Dead	938

But as several of the invalids died before they were discharged, they are necessarily included with the number dead; and as others recovered their health and rejoined the service, the total loss by invaliding is probably somewhat overstated; but in this department there are no means of correcting the error; nevertheless, the above figures are, according to the returns, substantially correct.

Home Station.

The report on the health of the naval force on the home station is founded on returns from sixty-four vessels, in which the mean strength corrected for time has been estimated at about 23,500 men. The average number of men daily non-effective from disease and injury in the respective vessels ranged from 6·9 to 64 per 1000 of mean strength. In some of the larger vessels the sick-rate was extremely high; as, for instance, in the 'Centurion,' 'Donegal,' and 'St. George,' owing to the unusual number of cases of venereal which occurred in each.

The number of men daily sick of primary and eruptive fevers averaged somewhat more than 1 in every 2000, and of intermitting fever about 1 in every 3000; this differs but little from the rates of the preceding year. The number daily sick of diseases of the brain and nerves averaged about 7 per 1000, while the rate of sickness from inflammation of the lungs and pleura amounted to 1·5; from phthisis to 1·3, and from catarrhal affections to 4·2 per 1000 respectively. The daily rate of sickness from disease of the alimentary organs and liver was extremely small, amounting to about 1 in every 2000 in the one instance, and 1 in every 5 in the other. From venereal complaints the daily rate—namely, 8·1—is somewhat lower than in the preceding year. The loss from ulcers, phlegmon, and eruptions, was equal to about 9 men daily per 1000, and from wounds and

injuries 5·7; so that of all the diseases affecting the force on the home station during the year, by far the greatest loss of service was consequent on venereal.

The total loss from disease, wounds, and injuries for the year on the home station was equal to 935 men daily, or in the ratio of 39·8 per 1000 of mean force.

Fever.

There were only 260 cases of primary fever, of which 9 terminated in death. The ratio of cases, 11·1 to the 1000 of mean force, was less by nearly one-half than the ratio of the preceding year.

Eighteen cases occurred in the 'Britannia,' the training-ship for naval cadets at Portsmouth; some of these were severe, and one terminated in death. The disease was confined principally to the cadets, for four only of the ship's company were attacked. The cadets, who were all mere boys between twelve and fifteen years of age, were no doubt more susceptible to febrile and catarrhal complaints than the seamen and boys of the ship, who probably all their lifetime had been accustomed to encounter cold and damp under more unfavourable circumstances even than in the 'Britannia.' This alone, it may be assumed, is quite sufficient to account for the cadets having been generally more sickly than the ship's company.

There were 324 cases or attacks of an aguish character; this form of fever was most common in the vessels stationed in the Medway, especially at Sheerness.

Eruptive Fevers.

There were 84 cases of small-pox, and 12 deaths.

There were 126 cases of measles, of which three died. The disease was contracted principally at Portsmouth, Plymouth, and Queens-town. Of nine cases of scarlatina, which occurred only in a sporadic form, one ended in death.

Disease of the Brain, etc.

Three men died of organic disease of the brain, and seven of apoplexy, one of which was consequent on excess in drink. Of 111 attacks of epilepsy, fifty-eight were invalided, and three died; and of 134 of delirium tremens, two were invalided, and six died; there was also a death from paralysis.

Respiratory Organs, etc.

There were 27 deaths from inflammatory affections of the respiratory organs, and 71 from phthisis, which proportionally exceeds the number on the preceding year by nearly one-half. There is also an increase in the number of cases of catarrh and influenza, but without any loss either by invaliding or death. Of 142 cases of disease of the heart and blood-vessels, 50 were invalided, and 22 died, including 2 of aneurism of the abdominal aorta.

Diseases of the alimentary organs were of less frequent occurrence than during the preceding year; 6 cases of an inflammatory cha-

racter, 1 of diarrhœa, and 1 of melæna or internal hæmorrhage. terminated in death. Four cases of disease of the liver, and 1 of jaundice, had also a fatal termination.

Genito-Urinary System.

Compared with the preceding year, there is a large increase in the ratio of venereal affections; but whether this arose from an increase of these diseases amongst the civil population, or from the respective ships' companies having been more frequently on shore on leave than usual, there are no means of ascertaining; but there can be no mistake in ascribing three-fourths of the total number of cases to the infected communities of Portsmouth, Devonport, and Sheerness. Whenever the crew of a sea-going ship is permitted to land on liberty at either of these ports, the indulgence is sure to be followed by a sudden rise in the sick list; this, in fact, is so certain, that the arrival of the ship and the granting leave might be ascertained by consulting the medical returns alone. For instance, out of 84 cases entered on the returns from the 'Aboukir,' upwards of 40 were contracted during a short stay at Devonport, in the latter part of the year; and in the 'Centurion,' which also lay at Devonport for some time during the first quarter, there were nearly 40 cases entered on the sick list.

The total number of cases in the home force for the year, including cases of a gonorrhœal character, amounted to 2716, of which 8 only were invalided and discharged from the service; but in addition to these there were 90 cases of stricture of the urethra, no doubt consequent, in a large majority of instances, on venereal complaints, of which 11 were invalided and discharged from the service. Of 17 cases of inflammation of the bladder and kidneys, 5 were invalided, and 3 terminated in death.

There was 1 death from rheumatism, complicated with cerebral effusion, 1 from erysipelas, 2 from abscess and pyæmia, 3 from debility and dropsy, 1 from disease of the supra-renal capsules, 1 from melanosis, and 1 from secondary syphilis, complicated with purpura; making altogether 195 deaths from disease alone.

Wounds, etc.

The total number of deaths from wounds and injuries was 27, of which 5 were Marines, and 22 blue-jackets; and of the 43 drowned, 1 only belonged to the Marines.

Invalided.

Four men were invalided for ague, and 95 for disease of the brain and nerves; 58 of these were cases of epilepsy, 16 of paralysis, and 8 of mental aberration. Thirty were invalided for inflammatory affections of the lungs, 132 for phthisis, and 5 for asthma, 50 for disease of the heart, 16 for disease—principally of a dysenteric character—of the alimentary organs, 3 for hepatic disease, and 31 for disease of the genito-urinary system; 96 for rheumatism and disease

of the bones and ligaments; 31 for diseases of the eyes and ears; 41 for disease of the skin and cellular tissue, of which 19 were suffering from intractable chronic ulcers, and 34 for dyspepsia, debility, and dropsy. Sixty-six were invalided for wounds and injuries, and 43 for hernia, making the total loss in officers and men by invaliding amount to 690, or in the ratio of 29·4 per 1000 of mean strength.

Venereal Diseases.

The following observations, which will be found in the Report under the head of Irregular Force, are of grave significance:—

The prevalence of venereal complaints in the large sea-port towns in this country has been frequently noticed in former Reports on the Health of the Navy; in the remarks on the home station for the present year it is also mentioned, and further evidence of the lamentable fact may be adduced from the returns received from the vessels irregularly employed, the majority of which, either while fitting out for foreign stations or in the usual course of general or particular service, spent a few weeks or months in some of the home ports. In most of these, but especially in such as remained stationary for a short time at Portsmouth, Plymouth, or Sheerness, there invariably occurred a sudden increase in the number of venereal complaints, provided the crews were permitted to land on leave of absence; for instance, in the 'Queen' there were 122 cases, nearly the whole of which were contracted on shore at Portsmouth, where she lay for several weeks consecutively during the first and second quarters. In the 'Melpomene' there were 74,—49 of syphilis, and 25 of a gonorrhœal character, all contracted at Portsmouth; upwards of 30 of these cases were put on the sick list during the midsummer quarter, while she lay moored at Spithead. Forty-eight occurred in the 'Megæra,' which were mostly the result of a casual visit to the same port. In the 'Bacchante' there were 34 cases, all contracted while fitting out at Portsmouth for the Pacific. In about two weeks 10 cases occurred in the small steam-sloop 'Harrier,' of which 6 were so severe as to require to be sent to Haslar Hospital, where five remained when she sailed for Rio de Janeiro.

The 'Nile,' a 78-gun ship, lay at Devonport from the beginning of January until the middle of April, fitting out for the North American Station, and during that period upwards of 100 cases of syphilis and gonorrhœa were placed on the sick list, of which 73 required to be sent on shore for hospital treatment. Her ship's company, it is true, amounted to about 760 of all ranks and ratings; still the enormous number of men sent to hospital with this loathsome disease shows the necessity there is for adopting some legislative measure for mitigating an evil which would hardly be tolerated in any civilized country but England. About 100 cases occurred in the 'Orion,' another line-of-battle ship, but of these nearly a third appear to have been contracted at Malta and Gibraltar, and the remainder at Devonport. Within the space of nine months 154 cases were placed on the sick list of the 'Emerald,' the majority of which were clearly traceable to the last-named port and Portsmouth; and in

the 'Indus' there were 52, all contracted at Devonport in less than six months. In every other sea-going or newly-commissioned ship the result was the same, whenever the crews were indulged with leave of absence, and leave they needs must have, or the naval service would become intolerable; they generally plunged into excess, and after a day or two returned on board infected with disease to an extent that few but the medical officers of the two services can have any idea of.

The contrast between vessels which leave this country for foreign stations and those which arrive from abroad, is very remarkable: the latter, with the exception of vessels employed on the coasts of China and Chili, generally leave the station they have been employed on with a clean bill of health as regards venereal, and arrive in this country in the same condition; whereas the former invariably, even after discharging many cases to the naval hospitals, carry away with them a large amount of disease, which they may, and no doubt sometimes do, disseminate in other towns and countries, where the inhabitants, comparatively speaking, are free from the syphilitic taint.

Of the total number of cases in this division of the force, amounting to 1271, it is clearly evident that by far the greatest proportion, probably upwards of three-fourths, was contracted at Portsmouth, Plymouth or Devonport, and Sheerness.

Secondary syphilis appears to be more common in some vessels than in others; this, with reference to the remedial measures adopted, is a question of no small importance. The assistant-surgeon of the 'Bulldog,' which was employed during the summer off the coast of Ireland, Greenland, and Labrador, mentions that when they left Stornaway there were 9 cases of sickness on board, and of these 6 were syphilitic. "The disease from the onset was treated locally by the free application of the nitrate of silver, while iodide of potassium and sarsaparilla were administered, with the view of preventing, as far as possible, the occurrence of secondary symptoms, yet without the desired effect, for nearly in every instance the intractable disease ran on from bad to worse. The character of the eruption was, with one exception, of the scaly and copper-coloured kind. In several instances the inguinal glands were affected; in a few there were sore throat, and in one iritis." Calomel and opium were exhibited in the last-mentioned case; but in the others the iodide of potash, with occasional doses of blue pill, appear to have been principally relied on. Again, in a return ending 31st of December, the surgeon of the 'Desperate' mentions that 14 cases of venereal presented themselves, "most of which were attended by bubo, which suppurated, requiring extensive and frequent use of the lancet, thereby materially protracting the duration of the treatment. All the syphilitic cases were treated without the aid of mercury, with the exception of the exhibition of one large dose of calomel as a purgative at the commencement."

There was a large amount both of primary and secondary syphilis in the 'Euryalus'; the former was contracted principally at Portsmouth, the latter occurred while the ship was at sea on her way out

and back from the Cape of Good Hope. The surgeon mentions "that many of these cases were of an obstinate character, frequently recurring after apparent cure;" and he had reason to believe that many other complaints, classed under different heads in the nosological table, were in reality disguised forms of venereal." In this ship mercury was invariably prescribed when the primary sore assumed the Hunterian character, unless the patient was of a scrofulous habit; but in less severe forms, when the sores were superficial, mercury was not prescribed, except in the smallest doses, when its alterative effect was desired. The undue proportion of cases of a secondary form in these and other vessels is a question of deep interest, and shows that the various modes suggested for the cure of syphilis is a subject which still requires investigation.

The following shows the ratio of attacks per 1000 of force on the respective stations:—

Home	119·5
Mediterranean	98·4
North American and West Indian	62·7
Brazil	54·4
Pacific	101·5
West Coast of Africa	42·2
Cape of Good Hope	30·5
East India and China	123·1
Australia	50·
Irregular	202·3

By the preceding statement it appears that venereal affections were most numerous in the Irregular Force, but, as previously noticed, they were nearly all contracted in the home ports; the ratio of cases is also high in the force employed exclusively on the home stations; in both instances, compared with the preceding year, there is a considerable increase in the number of cases. From this it may be inferred that these affections, notwithstanding the futile efforts which have been made to prevent them, are still as rife in our sea-port towns as they ever were. The ratio of cases on the East India and China Station is somewhat reduced; but whether this arose from an improvement in the police regulations at Hongkong, where a large proportion of the disease has invariably been contracted, or from the fleet having been employed during the summer months on the northern coast of China, and at a distance from the great centres of infection, is doubtful. There is also a slight reduction in the number of cases on the Pacific Station; nevertheless, the disease is now far more common in the force employed in these seas than it was some twenty or thirty years ago. Compared with the statistical tables for the period, the attacks are at least twice as numerous as they were at that time. The introduction, or, at all events, the rapid extension of the disease in the new settlements on Vancouver's Island, has no doubt contributed materially to its increase in the naval services during the past few years.

ART. IV.—*Report on Gun-shot and Sabre Wounds of Invalids sent to Fort Pitt during the Years 1860-61.*

By THOMAS LONGMORE, Esq.,
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Army Medical School.

From this most valuable Report we have selected a few of the cases of greatest practical interest.

General Remarks respecting the Cases of the Year 1860.

During the year 1860 the number of patients who were admitted and passed through the surgical division of Fort Pitt, labouring under the consequences of *polemical* wounds and injuries, were as follows :—

Under Vulnus Sclopetarium	89
„ Vulnus Incisum	5
„ Contractura	5
„ Amputatio	9
„ Cæcitas	1
Total	109

Of the above, 99, under vulnus sclopetarium, amputatio, and cæcitas, were gun-shot wounds, or the consequences of gun-shot wounds; 10, under vulnus incisum and contractura, were incised wounds, or their consequences.

Of the 99 invalids for gun-shot wounds, 3 were admitted twice,* leaving the actual number of individual invalids admitted during the year :—

Under Vulnus Sclopetarium, etc.	96
„ Vulnus Incisum, etc.	10
Total	106

Of these 106 invalids, 31 were re-admissions among invalids who had been under treatment in Fort Pitt Hospital before the year 1860 commenced, and had either been discharged to modified duty, or had been sent for change of air to Yarmouth; 26 were of the former class, and 5 of the latter. These 31 re-admissions have, therefore, to be deducted in computing the number of *fresh cases* admitted, or, in other words, the number of invalids resulting from the campaigns in which their wounds were contracted.

* It is necessary to make a clear distinction between the number of admissions which appear in the numerical returns and the number of individual patients admitted. This is not always done, and, when neglected, the omission leads to errors of a serious kind in the conclusions drawn from the returns referred to.

The fresh cases appear thus :—

Vulnus Sclopetarium, etc.	66
Vulnus Incisum, etc.	9
Total	75

The following Table shows the campaigns from which the 75 fresh cases were derived :—

Campaign or Action.	Year.	Vul. Sclop.	Vul. Incis.	Total.
Indian Mutiny .	1857-9	55	8	63
Beyt	1859	6	1	7
Moultan	1848-9	1	0	1
Moodkee	1845	1	0	1
Chillianwallah .	1849	1	0	1
Crimea	1855	2	0	2
Total . . . . .	...	66	9	75

Wounds of the Face.

The accidental wounds occurred at ball practice on the 18th of July, 1860, to two men, Private William Cotton and Private John Green, of the 1st Battalion, 4th Regiment. The rifle was fired at a distance of from 8 to 10 yards from the men wounded. The ball first struck Private Cotton, entering near the right corner of the mouth, in the upper lip, and was split against the lower jaw, which it fractured extensively. The upper jaw was also much injured. The greater part of the ball then made its exit about an inch below the tragus of the left ear, while a smaller portion lodged in the nape of the neck, whence it was excised. The larger portion of the projectile, after its escape, struck Private Green, who was standing near, at the symphysis of the inferior maxilla, and produced a comminuted fracture of the bone. The ball was discovered on the patient's admission at Fort Pitt; lying beneath the skin a little above the pomum Adami. When taken out, it was found to be much flattened out, and, lying near it, a small scale of lead, which had become detached. Extensive necrosis, and separation of many sequestra, occurred in both instances; but eventually complete union of bone and a favourable cure were obtained in each.

Wounds of the Chest.

The second case was one of a ball passing between the trachea and œsophagus, without leading to any permanent lesion in either organ. The patient, Sergeant Joseph Plumford, 42nd Regiment, aged 28 years, was wounded at the attack of the Begum Kotee, Lucknow, on the 11th of March, 1858. The projectile, a round musket-ball, entered an inch and a half above the sternal end of the

right clavicle, passed behind the trachea, and was excised on the opposite side of the neck, behind the acromial end of the left clavicle. The leading symptoms after the wound recorded, were—discharge of blood from the mouth; aphonia, which lasted for some days; and the usual symptoms referable to injury of the nerves of the brachial plexus.

According to the Sergeant's own statement, there was escape of air by the wound of entrance, indicative of an opening into the trachea, but this is not mentioned in any of the invaliding documents. No disphonia, no disability connected with the part of the neck wounded, existed at the time of his arrival at Fort Pitt, in April, 1859; but partial loss of sensation, with depressed temperature of the hand and of all the fingers, existed. The hand and fingers were permanently fixed in a straight position; the thumb retained its normal sensation and mobility. Any attempt to flex the fingers caused great pain in the course of the median nerve. He was discharged to modified service on the 3rd of May, 1859. He was, however, found unequal to this amount of duty, and was finally discharged on the 14th of October, 1860, the fore-arm being generally much wasted, and the middle, ring, and little fingers still anæsthetic, and extended. The fore-finger had, in a great degree, recovered its normal power of motion, so that by its means, together with the thumb, he had a grasping power of some useful extent.

3rd Case.—This case was of interest, as the history sent home with the patient stated that the wound had been regarded as an undoubted perforating wound of the chest; while its progress, and the state of the chest on the soldier's arrival at Fort Pitt, left no doubt in the minds of any of the surgeons who examined the man that the ball had only traversed that region external to the pleural cavity, although at the same time it had probably inflicted a severe injury to its contents.

The patient was discharged from Fort Pitt to his duty, at which he still remains.

The case is briefly as follows:—Private John O'Handlon, 28th Regiment, was wounded on the 6th of October, 1859, in the assault on the fortress of Beyt, by a matchlock ball. The projectile entered between the third and fourth ribs on the left side, about an inch external to the mammary line, and made exit at the inferior angle of the scapula, from which a small splinter was detached. The history sent by the surgeon was as follows:—"The ball entered the chest, passed directly through the lung, and emerged close to the inferior angle of the scapula. There was considerable hæmorrhage and hæmoptysis immediately after the injury, and urgent dyspnoea. Cough and febrile excitement were speedily developed. These symptoms remained more or less urgent for a fortnight, with copious muco-purulent, and occasional bloody expectoration, and also great discharge of matter, with air-bubbles, from the wound in the chest. During this time, while the wound remained anteriorly in a fistulous condition, and evidently communicating with a bronchus, the posterior opening speedily healed up. The progress towards recovery from this time, with the exception of some accessions of fever, was

generally satisfactory." The date of healing of the anterior wound is not stated.

This patient was admitted at Fort Pitt on the 26th of August, 1860. He was then in good general health, and the condition of the chest was normal, with the exception of some pleuritic thickening at the neighbourhood of the wound of entrance. It was elicited, in tracing the history of the case, that in this instance also, as in the first case, the axillary plexus had been injured by the passage of the ball, and the admitting medical officer notes, on the invalid's admission at Fort Pitt,—“He complains of uncomfortable feelings down the arm, but the motion of the joints are almost perfect.” The ribs in the neighbourhood of the wound of entrance were uninjured, and the cicatrix of the wound itself was not deeply puckered, or adherent, as would have been the case had there been direct communications with the lung; and when the short time within which the posterior wound is described to have become closed is considered, there can be little doubt but that the ball had made a circuit external to the pleural cavity, and had not passed through the lung. This was confirmed by observing the probable direction the ball would take when the man placed himself in a position similar to that in which he was with regard to the enemy at the time he received the shot.

The discharge of matter with air-bubbles from the anterior wound is quite reconcilable with the usual condition of the fistulous track of a gun-shot wound external to the chest, while sloughs are being detached: had there happened to have been forcible expulsion of air at each *expiration*, which is so strongly marked a symptom in a perforating wound communicating with a bronchus, a different diagnosis would have been necessary. *Hæmoptysis*, *dyspnœa*, *supervention of pleuritis*, are well known to be frequent accompaniments of gun-shot wounds of the chest, when no penetration deeper than the external parietes has occurred. The case was instructive, from the widely different nature of the diagnosis deduced from a study of its symptoms, and the condition of the chest, on the arrival of the patient at Fort Pitt, from what was formed of it when first treated; and more especially, because observation leads to the belief that gun-shot injuries to the chest, *without penetration*, are by no means unfrequently reported to be *penetrating* wounds, from the presence of symptoms which are really common, under certain circumstances, to both classes of injuries.

Examination after death occasionally affords an opportunity of demonstrating what close investigation is necessary for forming an accurate diagnosis of chest wounds. In the Annual Report of the 90th Regiment, for the year 1857, which includes the period of the siege of Lucknow, the following remark occurs by Surgeon Home, V.C.:—“I saw all the symptoms of a gun-shot wound of the lung, including copious spitting of blood and intense *dyspnœa*, with subsequent inflammation of the lung, in a case where, after death, I ascertained that the bullet had simply coursed *outside* the chest, fracturing the scapula and one rib. I could not make out that any spicula even had penetrated the pleura. The case occurred in one of the native regimental followers.” On the other hand, I may call

attention to a very instructive preparation which has lately been added to the pathological collection in the Museum of the Army Medical Department, which shows a *perforating* wound of the left lung, where several symptoms, usually described as of necessity present in such injuries, were absent. The preparation presents a widely lacerated circular perforation, near the base of the lung, which is greatly shrunk in size, from the effects of compression. The wound was caused by an irregular gingall ball, about one inch in diameter. The ball entered near the left mammilla, and made its escape by an opening one inch to the left of the spinous process of the ninth dorsal vertebra. The patient, Ensign —, lived for twelve days after the injury; and chiefly from the absence of the symptoms of hæmoptysis, and of any marked dyspnœa, a medical officer of experience was led into the mistake of assuring the colonel commanding this officer's regiment that the lung had escaped from being wounded. Such apparent anomalies in the characters of these wounds are readily explicable on proper investigation.

6th Case—Perforating.—Private Thomas Powell, 9th Lancers, was wounded at Delhi, in the right side of the chest, on the 14th of September, 1857, by a musket ball. The projectile entered between the second and third ribs, an inch and a half below the sternal end of the clavicle, and passed out posteriorly through the right scapula, beneath the spine. The injury, according to Surgeon Todd, 9th Lancers, was followed by violent inflammation of the lung. It was elicited from the patient that the wound was accompanied by hæmoptysis, which continued for some time; that blood, mixed with air, escaped from the front wound, and that several fragments of bone were removed from the posterior wound during the progress of cure. He arrived as an invalid at Fort Pitt, in June, 1859, and upon examination pleuritic thickening of the upper part of the right side of the chest, and some limitation in expansion as compared with the left side, were detected; but the man's general health was good, and the wound, not being supposed to be of a disqualifying extent, he was sent to try duty at his dépôt. He was found unserviceable by the regimental authorities, chiefly on account of dyspnœa, was again invalided in February, 1860, and ultimately discharged from the service. The force with which the ball appears to have wounded this patient, the projectile passing directly out, and the symptoms, though only very briefly recorded in the medical history from India, seemed to point to the conclusion that the lung had been traversed. If so, it is an additional example of the greater frequency of recovery from penetrating wounds of the apex,—like those of the periphery of the lung, where also vessels are of small calibre,—as compared with wounds of those parts of the organ which more nearly approach the larger ramifications of the vessels at its root.

Wounds of the Upper Extremities.

Twenty-seven cases of gun-shot wounds of the upper extremities were admitted during the year. Six of these were of Order 1, or "simple flesh contusions and wounds;" seventeen of Order 4, "with

compound fractures of one or more long bones;" one of Order 5, "with compound fracture of carpus and metacarpus;" and four of Order 6, "dividing and lacerating the structures of the fingers or thumbs." The wounds of Order 1 were chiefly of interest on account of their consequences, viz., contractions or atrophy, causing the men to be invalided to Fort Pitt. The axilla was the part injured in two instances. In one case—that of a sergeant of the 90th Regiment, at Lucknow—a musket-ball passed through both folds of the axilla; but, though numbness and loss of power of the arm resulted as an immediate effect of the injury, these symptoms gradually subsided. While under treatment in India for the wound, contraction of the elbow-joint occurred from disuse, and he was invalided home on this account. After admission at Fort Pitt he was placed under chloroform, the contraction reduced, and he was discharged for duty with the motion of the elbow-joint nearly perfectly restored. In the second instance, the posterior fold of the axilla was struck by a piece of timber detached by a round shot, in July, 1857, at Lucknow. The insertions of the *latissimus dorsi*, *teres major*, and long head of the *triceps* muscles, appeared to be chiefly injured by the contusion. Adhesions, leading to contractions, were established; and loss of power of elevating the arm from the side led to the patient being invalided and discharged from the Army in March, 1860.

The third case of this order also presented features of interest. A private of the 52nd Regiment was wounded at Delhi, by a musket-ball through the left deltoid muscle. The humerus was apparently uninjured. He was invalided home on account of general loss of power in the arm. The history forwarded with the patient did not afford further details. On admission into Fort Pitt, the deltoid muscle was found to be atrophied in its central portion, being firmly bound down to the humerus on each side of the bicipital groove. The groove itself could be distinctly traced by the finger. The bicipital tendon was firmly bound down in the groove, there being no movement of it when passive motion of the arm was made. This mechanical impediment to the play of the tendon had led to atrophy of half the belly of the *biceps* muscle. From the lesions described, there resulted partial inability to flex the fore-arm upon the upper arm, and also loss of deltoid power of elevating the humerus. This latter was in some degree compensated by increased development of the upper portion of the *trapezius* muscle on the same side. This soldier was sent to the dépôt of his regiment, and recommended for modified duty, but not retained. He was ultimately discharged from the Army in October, 1860.

The instances of wounds in which the bones of the hand and fingers were involved do not call for special remark. When once a soldier has been wounded in these situations, it can rarely happen that the practice of conservation will leave the patient capable for the duties of a soldier, however favourable, in a surgical point of view, the result may be. This is especially the case in wounds of the right hand. The fascial contractions and thecal adhesions which usually follow such injuries, even under the most favourable circumstances of union, sufficiently explain the consequence described. In

one of the instances included in this number, the invalid suffered from constant wearing pain in the course of the ulnar nerve, after amputation of the little finger. The pain was so great and the irritation so constant, by day and night, slight as its origin appeared to be, that the patient was greatly reduced in general health. The cicatrix was opened, and a portion of it, suspected to be the part in which nerve was involved, from its special tenderness, was excised. The result was most satisfactory, for total relief from the pain followed. On examination by the microscope, it was ascertained that the part excised consisted chiefly of nerve fibre enclosed in cicatricial tissue.

Wounds of the Lower Extremities.

Shaft of Tibia.—One of these cases is worth notice from the situation in which the ball became lodged. The wound occurred in Private James Kerry, 2nd Battalion Rifle Brigade, in Oude, on the 12th of April, 1859. He was struck by the ball in the middle of the right tibia. The bone was fractured at the part struck, and the ball lodged. Four months afterwards the ball was discovered near the insertion of the tendo-Achillis, in the hollow space between it and the calcaneum, and was excised from this situation. Union of the fractured bone was effected; but the patient suffered afterwards from necrosis of the tibia and consequent lameness.

Order 5, Wounds of the Foot.—In one of these cases considerable difficulty was experienced in extracting the ball, which was deeply and firmly embedded in the astragalus of the right foot. The extraction was finally effected by means of a "screw tire-balle." Surgeon Marlow, M.D., who forwarded a report of the case, wrote as follows:—"It was found impossible to extract the ball by ordinary means. Fortunately the instrument made by Savigny, in the form of a screw, with a silver canula, was procured, and passed down upon the bullet. The screw wormed its way into the lead without the employment of any power, took a firm hold, and but for the extreme tightness with which the projectile was held, would have extracted the ball altogether. The great force found necessary for overcoming this resistance, however, drew the instrument out of the lead; but, in doing so, the bullet was lifted out of its bed, and thus was afterwards capable of being extracted without much difficulty." The injury occurred in Private Peter M'Cormack, 28th Regiment, at the assault on the fortress of Beyt, in 1859. Considerable local inflammation and constitutional irritation followed, but the foot was saved with partial stiffness of the ankle-joint and wasting of muscles.

General Remarks respecting the Cases of the Year 1861.

During the year 1861, the number of patients who passed through the Surgical Division of Fort Pitt, labouring under the consequences of gun-shot injuries, was 60. Of these were :—

Polemical	58
Accidental	1
Self-mutilation	1
<hr/>	
Total	60

None of these 60 were admitted more than once in the course of the year.

Fifteen of the polemical cases were re-admissions from among men who had been under treatment in Fort Pitt at previous periods, and discharged to modified duty, and one case was a re-admission, but of a peculiar kind; leaving, therefore, 42 primary admissions out of the total number (58) polemical invalids admitted. In the instance of the re-admission last referred to, the patient, who had been wounded at both the battles of Alma and Inkerman, was discharged as a pensioner in 1855; but re-enlisted in 1860, with a view of completing twenty-one years' service, and gaining an increase to his pension. His case will be alluded to under "Wounds of the Lower Extremity."

The following Table shows the localities of the military operations in which the 42 freshly-admitted invalids received their wounds. The 16 re-admissions just referred to are not included in this Table; they have been already accounted for in previous returns, viz. 2 in the Crimean returns, and 14 in returns of the Indian Mutiny.

India, 1857, 1858, and 1859	15
Beyt, 1859	1
Burmah, 1856	1
Crimea, 1854 and 1855	6
China, 1860	9
New Zealand, 1860 and 1861	10
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Total	42

Wounds of the Head.

Five cases of this class were invalided, three being cases of injury to bone without depression, and two supposed to be accompanied with depression.

Of the invalids for wounds of the head *without depression*, the cause of unfitness in one was persistent headache and vertigo, particularly on stooping, or on unusual exertion. The patient was wounded by a grape-shot at Delhi in 1857. There was a slight adherent cicatrix at the seat of injury, near the right parietal bone.

The second case presented some features of interest. It was as follows:—Private James Newman, 40th Regiment, was wounded in the attack on the pah at Waitara, on June 27, 1860, by a round musket-ball, which passed through his forage cap, and struck him obliquely on the forehead, about two inches above the right supra-orbital ridge, above the frontal sinus, and a little to the right of the mesial line. A jagged oblong wound of the integuments, about two inches in length, resulted; and the outer table of the os-frontis was

observed to be fissured, but there was no depression. The man appears to have been comatose for a short time after the injury. On recovery, finding himself alone, he managed to creep through the high fern to camp. None of the usual signs of cerebral lesion were observable after his arrival at the field hospital; his only complaint was loss of sensation on touching the scalp for some distance above and in the neighbourhood of the wound. There was no headache, excepting when he coughed, or otherwise jerked himself. Several fragments of the bone subsequently exfoliated, and a puckered, depressed cicatrice, into which the end of the thumb could be inserted, took place. When invalided home from New Zealand, the symptoms noticed by the invaliding surgeon were, "dimness of vision of the right eye, accompanied with pain in the head." Considering the close neighbourhood of the wound to the organ of vision, it seemed not unlikely that a fissure, or other injury of the retina, might have been caused by the stroke of the projectile, but ophthalmoscopic examination at Fort Pitt showed that no lesion of this structure had resulted. The imperfect vision was attributable to hypermetropia, doubtless of congenital origin; and, on fully questioning the patient, he admitted that vision in this eye had always been weak and imperfect. Headache, vertigo, and other cerebral symptoms rendered him unfit for service.

Wounds of the Face.

The third case was remarkable—perhaps unique, as I cannot find that any similar one has been recorded. The injury was followed by total dumbness, without any direct lesion of the tongue, larynx, or those structures which are chiefly concerned in vocalization. The patient, Private James Davis, 1st Dragoon Guards, a stout, healthy soldier, was struck just below the centre of the lower lip, during a charge of his regiment, on the 21st of September, 1860, at the general action of Pal-i-chou, near Peking, by a small matchlock ball, weighing 7 drachms. The ball penetrated, carried away part of the alveolar process, 4 teeth, viz. 2 incisors, 1 canine, and 1 bicuspid, on the left side, travelled downwards behind the symphysis, clearing away the origins of the genio-hyo-glossi muscles in its passage, and lodged in the soft tissues of the floor of the mouth, below the frænum-linguæ. According to the history of the case, loss of the power of articulation immediately followed the wound, and never returned in the slightest degree, either in China, or during the voyage home to England. The ball was not removed till the twenty-third day after the injury; it was then extracted from within the mouth.*

When this patient was examined in Fort Pitt, the inferior maxillary bone was found to be a little thickened at the seat of injury, viz. at the symphysis, and for about an inch and a half of the left

* The man had the ball in his possession at the time he was in Fort Pitt. He would not part with it, and a cast was, therefore, taken of it and placed in the museum. It shows accurately enough the alterations of form and furrows of surface caused by collision with the bone (Specimen No. 3698).

side of the body of the bone. The power of opening the mouth was slightly more limited and natural. The gum was sunk at the place from which the alveolar process had been removed by the projectile. The tongue appeared to be somewhat wasted, and its movements, upwards towards the palate, and forwards towards the lips, rather more limited than natural. There was no evidence of muscular paralysis. The sense of taste was unimpaired, nor was there any loss of ordinary sensation. The larynx seemed unaffected. The usual laryngeal sounds could be uttered, but none of their modifications necessary for speech could be effected. The power of whistling was gone. It did not seem clear to what special cause this total deprivation of the power of articulation was due. Neither injury to the hypoglossal nerve, if such had occurred, nor the separation of the genio-hyoglossi muscles, seemed sufficient to explain such a total loss of speech, for no similar result has been noted after any of the numerous gunshot wounds of the jaw, or surgical operations performed upon it, as far as surgeons have recorded the cases. After the closest investigation at Fort Pitt, there did not appear to be any grounds for supposing that the soldier was feigning his disability. Several surgeons, and among others, an eminent surgeon, in civil practice in London, expressed doubt as to its genuineness, and I felt, although satisfied myself that the symptoms were genuine, that other surgeons hearing of the case would equally have doubts on the subject. I therefore wrote, some time after the patient left Fort Pitt, to a surgeon in the neighbourhood of the place where the man had settled as a pensioner, for information regarding him. If the man had been malingering, it was to be concluded that by that time he would be no longer speechless, there being nothing further to be gained by the imposition. The following was the reply I received:—

“Wiveliscombe, 5th June, 1861.

“DEAR SIR,—I was not able to go over to Crowcombe until yesterday (that village being nearly ten miles distant), and then, unfortunately, did not see Private James Davis, as he had gone up on the quanstocks, and after waiting an hour, I was obliged to return. I took the opportunity of making inquiries among the villagers, at the rectory, at the public-house, and the blacksmith's, and I thus gathered that the man is unable to speak, and the history he gives (in writing) tallies with the account you wrote to me, of his inability to articulate. It appears that he either writes what he would say, or makes signs. He lodges with a pensioner named Farthing, who is almost totally blind, and this morning, both the men having heard that I was making inquiries, came over to my house, and I had an opportunity of examining the man. I have seen something of malingering, and I do not think there is anything of the kind in this case, etc.*

“I am, Sir, etc.,
(Signed) “WM. LEGGE.”

* “Fort Pitt, December, 1862.

“I have since received further details, which tend to give additional interest to the case of this soldier. At the latter end of July, 1860, he sud-

Wounds of the Chest.

The next case is one of peculiar interest, having been accompanied with that rare complication of a gun-shot wound—general subcutaneous emphysema. The history is as follows; it was chiefly derived from the patient himself:—Private Jeremiah Murphy, 40th Regiment, admitted 31st May, 1861, aged 27, a fine muscular man, was struck in the left shoulder on the 27th of June, 1860, at Waitara, in New Zealand, by a musket-ball. The projectile was probably a round one, weighing nearly an ounce, that being the usual weight and shape of the balls used by the New Zealand natives. It was fired from an elevated position. The ball entered $2\frac{3}{4}$ inches beneath the left acromial process, on the external aspect of the shoulder.

denly recovered his voice while in a state of excitement. The following is the account given to me of the occurrence by Major Bace, Staff Officer of Pensioners in the district where the man resided:—‘He was in a public-house at Crowcombe, with several others, and had been drinking some ale. The landlady wanted to charge him for a pint of ale which he had not had. I have ascertained that he really had not the extra pint he was charged with, and which was afterwards settled. This caused him to become very violent, and when endeavouring to say, ‘The girl is a liar,’ he found he repeated the words in his natural voice, but not so fully as he could do three or four days afterwards.’ The Rev. Mr. Hotham, Rector of Crowcombe, has given me the same account of the occurrence. He writes:—‘Several people were present when the recovery occurred, and it was not a little startling to the company, as there had never before been an attempt at articulation. A bystander reported that the colour rushed to his face so as to make him look almost black; the veins in his neck were distended, and there was everything in his look and manner betokening a sudden explosion.’ Mr. Hotham adds, in his note to me:—‘I feel more and more convinced, from particulars which have come out in the course of this inquiry, that there is not the slightest ground for suspicion that he feigned deprivation of speech in order to escape service in the Army, or for any other cause.’

“Major Bace was kind enough to examine the man on the 1st of the present month (December, 1862) at my request, and to transmit to me remarks on his state at that time. The Major reports that his articulation is good, free from hesitation or any other defect; that he has no difficulty in pronouncing each letter of the alphabet distinctly; that he can now whistle, but not so well as he could do before his wound; that he can masticate food thoroughly, but that he does so chiefly on the right side of the mouth, the opposite to that principally injured.

“This case is of much interest to the military surgeon, from the liability of dumbness, with so little apparent cause, as shown by the sentiments of several surgeons expressed regarding it, being ascribed to malingering; and also with reference to the length of time which elapsed before speech was restored after such an injury.

“Professor Aitken, regarding the case from a pathological point of view, considered the injury to the muscular tissue alone sufficient to account for the dumbness; but that, in addition, the inflammatory changes amongst the tissues in the immediate vicinity of the ball (which lay embedded amongst the injured parts for twenty-three days) might be expected to disturb the operation of the ninth pair of nerves, without altogether destroying their influence.”

The cicatrix of the wound is circular, showing the straight direction of entry of the projectile. There was no wound of exit. The ball lodged, and its site has not been discovered. Immediately after he was wounded his arm dropped powerless by his side, his mouth became filled with blood, he became faint, and fell. The spitting of blood continued; so that he expectorated altogether, he thinks, about a pint, chiefly in clots. He never wholly lost consciousness. He was conveyed in a bullock-cart about a mile, over rather a rough road. Emphysema of the left shoulder, and of the parietes of the chest on the left side, both anteriorly and posteriorly, extending down to the lumbar region, was present next day. This was mentioned by the surgeon in the few remarks which were sent home with the invalid; no information respecting its subsequent progress or subsidence was given.* There was also pain within the chest, a "catch" in breathing, as if from pleurisy, felt, particularly at the *bottom* of the left pleural cavity. According to statement, the dyspnœa was very severe for about a week, and the patient was told he had been constantly wandering during that period. Expectoration of blood and the pleuritic symptoms continued for about a fortnight. The wound healed in about six weeks. Local application of lint to the wound of the shoulder was the only treatment; no venesection was practised. After all active symptoms had subsided, tonics were administered.

The following was the state of the chest, noted on his admission at Fort Pitt:—"There is an appearance of fulness of the left supra and infra clavicular regions, but the girth of each side of the chest on measurement is nearly equal. No flattening observable. Very slight differential dullness is noted on percussing the left side, near the apex of lung; but the vesicular respiratory sound is normal throughout. The chest expands well on both sides. The man states that he cannot bear the pressure of belts across the chest, and that any fettering in its movements, when he is under exertion, causes much feeling of oppression. He states also that he has some stiffness about the shoulder and tenderness on pressure in the neighbourhood of the cicatrix. A small conical exostosis can be felt almost immediately below the cicatrix, projecting from one side of the bicipital groove. The bone was probably struck by the ball in this situation."

There are many points of importance in this case. A recovery, after an undoubted wound of the lung, so perfect that the respiratory murmur should be left normal throughout the organ, without

* Mr. Murray, who went from Australia to New Zealand on the rebellion of the Maori natives, and was attached as an Acting Assistant-Surgeon to the 40th Regiment, and under whose care this case fell, has passed through the Army Medical School with great credit during the present year (1862). He informed me that in the engagement with the Maoris, in which Private Murphy was hit, there were 65 men of the 40th Regiment killed and wounded; and that from the circumstances in which they were placed, and the amount of duty which fell on the two medical officers with the Regiment, it was not possible to keep full reports of the cases. But Mr. Murray kept a pocket memorandum-book for noting down special occurrences.

any depletion by venesection having been had recourse to, is a fact that would have been regarded as little short of an impossibility in the time of the Peninsular campaigns. It serves, however, to strengthen the experience afforded by several similar cases which occurred during the Crimean war. It seems not unworthy of consideration how far the partial collapse of the lung, which must have been caused by the pneumo-thorax in this instance, may have prevented general adhesion between the pulmonic and costal pleuræ, and modified other accidental consequences which are not unfrequently found to attend chest wounds involving the organs of respiration.

This case also affords an example of lodgment of a bullet in the chest, probably in the lower part of the pleural cavity. The fact that the pleuritic pain was referred chiefly to this situation, notwithstanding its remoteness from the site of injury—and this, too, almost immediately after the wound was received—points to this conclusion. The bullet is now probably fixed by lymph thrown out at the time the pleural membrane was in a state of inflammation; so that its presence is not rendered perceptible by changes of posture. A sergeant of the 41st Regiment was wounded in the trenches before Sebastopol by a rifle-ball, which passed through the apex of the left lung, and fell to the bottom of the pleural cavity: he survived the wound ten days. At the post-mortem examination the bullet was found embedded in lymph on the upper surface of the crus of the diaphragm. Mr. Guthrie and others have recorded similar cases.

Wounds of the Lower Extremities.

The following case of flesh-wound is instructive, in showing certain consequences of the lodgment of a bullet in the glutæal region. —Private Andrew Madden, 35th Regiment, aged 25, was wounded when on field-service in the Kareen jungles, Burmah, on the 6th of June, 1856, by a musket bullet. The ball entered three inches below the anterior superior spinous process of the ilium on the left side, passed backwards, and buried itself in the glutæal muscles. No attempt was then made to extract it, as it could not be felt. The wound gradually healed, but he suffered afterwards from pain, which was attributed to the effects of rheumatism.

On the 24th of May, 1857, this soldier was admitted into hospital at Rangoon, for what was supposed to be a slight attack of intermittent fever. At the same time the glutæal region became painful, and a hard, circumscribed, deep-seated swelling was felt on pressure. This swelling increased. On August the 26th, 1857, an incision two inches in length was made; some pus was evacuated, but no bullet could be discovered, though examination was made for it. The patient was left in hospital at Rangoon on the regiment being moved to Bengal.

On April the 28th, 1858, he was admitted at Fort Pitt as an invalid from Burmah. There was then a small opening in the situation of the above-mentioned incision remaining unhealed; and, on a probe being passed into this, a sinus was found to lead deeply

into the buttock. The man complained of pain in the groin, and along the crest of the ilium, and occasional stiffness extending along the back of the thigh down to the ham. He walked with a slight halt, and stated that if he walked quickly the pain in the inguinal region was increased. It appeared evident that the open track in the glutæal region led to the site in which the bullet was lodged, and on the 10th of May, 1858, a longitudinal incision was made by the side of the sinus by Staff-Surgeon Dr. Williamson, and the ball extracted. The wound was healed in a month, and on June the 15th the man was discharged to duty.

On the 18th of November, 1861, this soldier was again invalided from the dépôt of his regiment as unfit for duty, from the effects of his wound. He complained that the limb became quickly tired on exertion of any kind, and that he experienced difficulty in mounting steps. There was scarcely any perceptible wasting of muscles, and it was thought that he exaggerated his disability. The adhesions, however, which were probably contracted from the effects of the inflammation, suppuration, and sinuses resulting from the passage and prolonged lodgment of the foreign body, would, doubtless, sufficiently account for the inconveniences of which he complained. At this period a very distinct slit in the fascia lata still marked the site of the original entrance of the bullet, and I am led to believe, from repeated observation, that the openings made by bullets in such fascial aponeurotic coverings never do become united.—*Army Medical Report.*

ART. V.—On Gunshot Wounds.

By ALEXANDER NEILL,

Assistant-Surgeon, 65th Regiment.

The following paper, by Mr. Neill, is founded on observations made while serving in New Zealand, and is of much practical interest. Mr. Neill ascribes his success in treatment to the employment of cold dressing in the first instance, and to the very simple mode of treatment pursued throughout. After the reading of this paper at a meeting of the Edinburgh Medico-Chirurgical Society, an interesting discussion took place, a report of which will be found in the *Edin. Med. Jour.* for March:—

“During the past ten years the subject of military surgery has been brought prominently before us, and has excited much interest in all branches of the medical profession, and of all departments of both services. For many years back we have had military surgery treated as a speciality, and taught as such in most recognised schools. Instruction in this branch of the profession was formerly confined to those who proposed to enter, as medical officers, either the Army or the Navy: but in the present day, when our whole nation has become more and more interested in military matters, and when every man who can ‘do a little’ is anxious to be a soldier, it is necessary that the

peculiar forms of accidental injury and disease incidental to warfare should be brought prominently before and taught to all who now study for the medical profession?"

After some observations on the plan of treatment followed by the ancients, which must have caused more misery and suffering than the infliction of the injury itself, Mr. Neill proceeds:—

"Very little alteration in the treatment of gun-shot wounds was made until the commencement of the Peninsular War, and even during the early part of it the same mode of treatment was pursued; but owing to the great losses of men from deaths in hospitals having occasioned some inquiry into the treatment of wounds in general, it was resolved to abandon the system previously in vogue, of invariably making the wound larger than it was by incision, and instead of the hot poultices and dirty plasters, to adopt the more sensible plan of cooling applications. And as it was found that the patient's general health was injured by having his wounds always saturated in the pus discharged from them, instructions were given to endeavour to keep the parts as clean as possible, and to change the dressings 'more frequently' than once a week. Since then great advances have been made in military surgery, and we now appreciate the absolute necessity of avoiding over-crowding in hospital wards, of paying great attention to proper ventilation, of keeping the wounds well washed in cold spring-water, and never allowing any offensive smell to arise from the collection of pus; thus conducing to the patient's comfort and general health, which formerly were never studied. The consequence of this mode of treatment is, that we now have cases of men recovering from wounds almost always looked on formerly as fatal. We seldom or never hear of hospital gangrene, or any of those diseases created in the wards of an hospital where a number of cases of wounds discharging pus are under surgical treatment.

"In the present day our missiles of defence and offence consist of the rifle and bayonet, smooth-bore gun, pistol, cannon of various calibre and formation, calculated to throw either round shot or cylindrical shot, or shell percussion, as in the Armstrong gun, or with a fusee, as the old gun. Then we have the mortar and cohorn, for a vertical fire, to use an artillerist's expression, calculated to throw shell. Then for the smooth-bore cannon there is the solid shot, the grape shot, and the canister shot, which in their names express their form of composition. Bar shot are two large shots welded together, with an iron bar between; and chain shot, with a chain between two large shot, which are calculated to mow down like a scythe, making fearful wounds. The two latter are used chiefly against bodies of horse, and on shipboard. The shrapnel shell is a hollow sphere of iron, filled partly with gunpowder, and partly with pewter or iron balls of small size. The common shell is an iron sphere filled wholly with powder. The musket-ball is round and solid, of lead. The rifle bullet is an elongated, expanding, cylindrical, conoidal projectile, as the musketry instructors tell us, weighing about one ounce, and calculated to travel an immense distance, and at a very great rate. The wounds caused by cannon

shot and shell are fearful, and those by the rifle bullet, though not so severe to look at, are often most dangerous. It is a difficult thing to judge which form of weapon is the most destructive of life. Against masses of troops the cannon is no doubt very efficacious; but then, at certain ranges, the rifle is equally so. The characters of the wounds inflicted by these various missiles are equally varied. Shot and shell tear away large portions of the body; and I have seen legs and arms stripped off, one-half of the chest quite cut away, and the body cut in halves by cannon-balls. Shell generally, by exploding in fragments, either impact themselves in the tissues, making wounds frightful to look at in extent, or merely cut away portions of the body. The wound of the rifle bullet is, of course, very small, and apparently very innocuous compared with the large-shot wounds, but they are just as efficacious in the destruction of life. To give an illustration of the force with which a cannon ball must travel, I may mention that I saw a case where a man had all the ribs, both clavicles, and one arm fractured by attempting to catch and stop a round shot, which was apparently spent, and was rolling along the ground in an innocent manner. He caught at it, and was thrown down, struck on the chest, and the shot rolled over, leaving him *in articulo mortis*. In this case a portion of fractured rib had passed through the pericardium, and wounded the substance of the heart. What are called spent rifle-balls are capable of inflicting much and severe injury, and always make an extensive bruise. To show the effects of being hit with a spent ball, or one that has lost its greatest impetus, I may mention a case that came under my notice, where a colonial volunteer was standing talking in a group of his comrades during an action, and was struck by a ball in the abdomen, over the region of the bladder. The ball fell on the ground at his feet, without either injuring his clothes or even marking the skin. He did not feel much pain at the time, and walked to the hospital, a distance of two miles, with the ball in his pocket, without feeling much pain, but he died shortly afterwards from peritonitis and extensive inflammation of the bladder. The entire surface of the abdomen presented the appearance of a severe bruise in a few hours after being struck. I could mention several other cases more or less bearing on this point, but they only help to prove the fact that a spent ball can kill without wounding the integument, and show how small an amount of injury will often take away life; but, on the other hand, it is wonderful how great an amount of injury the human system can endure without succumbing under it. Both legs may be shot away, with great loss of blood, and amputation be necessary afterwards; yet, with such mutilations, death is not always the result.

“One of the first peculiarities of gunshot wounds to be mentioned is, the shock to the system, which is generally present in a greater or less degree; but it is not always the case that in very severe and dangerous wounds the amount of shock is very great. I have seen some instances of comparatively trifling wounds where the extreme prostration of the vital powers seemed to indicate much injury, but on examination discovered no dangerous wound, or even

great loss of blood. The shock does not always bear a marked relation to the severity of the injury; it seems to depend greatly on the constitution of the patient. To his mental powers and his physical conformation may be ascribed many of the anomalies we observe in this state of the nervous system. Ballingall has noticed this in his excellent work on military surgery, and ascribes it to the same causes. However, it is an undoubted fact that when a person feels himself wounded, let his self-possession and his coolness be what it will, he cannot help feeling an irresistible tremor and nervous agitation, even though it lasts only for a few moments. In some persons the power over the feelings is brought under the domination of the will, and consequently such people speedily regain their self-possession, and will submit to any operation, or endure any amount of pain, without changing even the expression of their countenances. To the suddenness of the injury, and the uncertainty of the amount of danger to life which is sustained on the instant, and when the mind has been engaged in some other manner, and perhaps in a high state of excitement at the time, may be ascribed this peculiarity; and in which instant the reason can see nothing but extreme danger. The amount of the shock to the system is to be observed and studied, and is of immense importance in determining as to the performance of any operation at the time of the injury, or deferring it until some other period when the nervous system shall have recovered its power, and the mind its equilibrium.

"It is a matter of serious import to us when we have a patient on the field who has received a wound which we know requires the performance of some capital operation, such as the removal of a limb (and who is at the time in a state of complete shock, which of itself is sufficient to destroy life), to determine what to do in such a case. The nature of the injury, its situation and extent, must be the first inquiry, and a hasty opinion formed in the mind as to its probable result, so as to determine the question of immediate operation to save life, which may be ebbing fast from loss of blood or shock. It is advisable, if possible, to defer any capital operation till the patient be removed to a more suitable operating theatre than the open field; and it requires no small amount of nerve and decision of character to enable the surgeon to contemplate calmly the necessary steps to be undertaken when in action.

"Gunshot wounds of every variety are classed in the Army Medical Reports under the heading of *Vulnus Sclopetarium*, though they might with more propriety be subdivided into simple and compound,—the mere *flesh-wound*, caused by the passage of a ball through the soft parts without involving injury to bone, artery, or nerve, being one subdivision; and the more *complicated* injury, where fractures of the bone and other dangerous lesion has occurred. Gunshot wounds are sometimes classed as mortal, dangerous, severe, and slight,—each of which bears its explanation in its name. The characters of a gunshot wound are those of a contusion and laceration of all the tissues. Sometimes they are so simple as to bear resemblance to a punctured wound, particularly if a rifle-ball, re-

volved on its long axis, has passed through the soft part at a great speed; but within a few hours it resembles a contusion. The wound of entrance, as it is termed, bears no comparison, in either size or shape, to that of exit, when a rifle-ball has caused the injury. In the former you see the edges of the wounds curving inwards, and its circumference small, with little or no hæmorrhage. In the latter the wound is large, with torn and irregular edges projecting outwards, and perhaps only slight oozing of blood. In a short time, averaging an hour, around the entrance wound slight redness begins, gradually extending to about two inches around its orifice. Again this colour changes to blue or greenish-black, and you see all the appearance of a severe bruise, with a small wound of the skin, its edges still curved inwards. In the exit wound the discoloration of the skin is not apparent. Inflammation quickly sets in throughout the whole course of the wound, and suppuration more or less profuse follows, with sloughing of the injured tissues. During this stage secondary hæmorrhage is to be looked for, if in the course of the missile an artery has been injured or approached too closely; but loss of blood from a wound of this description is not frequent. Pain is great in the injured part, and much increased by motion of the limb; cicatrization throughout the whole course of the wound sets in, and in this manner heals. By care, and with every circumstance favourable to recovering, a patient may soon be going about once more, and have no ill effects from a wound such as I have described. Great loss of substance in the tissues is also well marked, induced by the separation of a slough more or less extensive.

"The treatment to be pursued in a case such as I have described is very simple; the wound must be examined and sponged, any foreign body, such as shreds of clothing, etc., removed, and in suitable localities uniform pressure may be applied; in a simple wound, union by the first intention may be induced by closing the orifices and applying slight pressure by bandage, with attention to the position of the limb by giving it complete rest. In one case I saw this result well marked, where the ball passed through the muscular part of the upper arm in its anterior aspect. The wounds were immediately closed from contact of air by isinglass plaster, and a bandage applied. The arm was supported in a flexed position, and cold water abundantly used, to keep down inflammation. The orifices of the wound were quite healed, and the arm in use ten days afterwards. In a similar case, where a different plan of treatment was followed, suppuration set in, and the arm was useless for three months. With water, either cold or tepid, I have seen many almost miraculous cures effected. I consider that in cases where the vitality of the soft parts has been partially destroyed by bruise, tepid water and lint are very necessary as assisting to bring back the vitality, after which cold water may be applied with much benefit. In cases of compound fracture of the long bones with gunshot wound, after the limb has been put up in splints and bandages, cold water will prove the best application, kept constantly dripping over the wound, which must not be closed over by either splint or bandage, but so arranged as to be quite exposed to the water. In

seven cases of this description, four were gunshot wounds with fracture of the humerus, in three of which the ball passed out, and in one the ball was lying in the bone and was at once extracted. In these three the arm was put up in the usual manner as for fracture, but leaving the external wounds exposed. The patients were kept in bed with the arm flexed, and so arranged that a constant stream of water was kept trickling over it, carrying off the pus discharged. A pail was made and raised over the bed, with a tube so placed as to carry a small stream from it to the limb, and regulated so as to change the temperature of the water occasionally if needful; one case was fracture of the tibia in its lower third, and one fracture of both bones of the forearm, with two external wounds. In the former case the man was aged twenty-four years, and three months after recovering was killed accidentally. On dissection of the leg, I found that the fracture had extended down to the joint of the ankle, and both pieces of bone were joined perfectly; the mark of union was most distinct. In all these the plan of treatment by cold water was adopted with successful results.

"In fifty cases of gunshot wounds, including all descriptions, treated thus by local applications, a successful issue was obtained. Gunshot wounds of the head and face generally terminate fatally; but if no very serious lesion of the brain occurs, much may be done to save life in the treatment. I have noted one case where a man was shot in the head: the ball entered the left eye and passed into the brain from below upwards; the patient was aged twenty-one years, of good general health, and of abstemious habits. He was found apparently *in articulo mortis*; great hæmorrhage had taken place, his face and hair being covered with blood. I washed away the blood, and gave him weak brandy and water in small quantities. He was unconscious, and his pulse was scarcely perceptible. After getting the stimulant, his pulse gradually got stronger, and he seemed more conscious, though not able to speak. In four hours I looked again at the wound: blood was oozing from it, and a substance resembling that of the brain itself. His pulse was now small and rapid, and he was quite unconscious and unable to swallow. He had croton oil dropped on his tongue; his head was shaved; cold water was kept trickling over; the stimulant was stopped. The eye was quite destroyed, and was removed on the second day; after which time he seemed to improve, but still remained unconscious. Soup was administered by the stomach-pump every day. The only topical application was lint and cold water. It is needless to follow out this case. The patient gradually recovered; the bullet being somewhere in the brain, having no doubt become encysted. The only remarkable thing that occurred in this case was, that paralysis of the right side of the body occurred, the opposite to that on which the ball entered. His general health is good, and he has never had convulsions or epilepsy.

"Gunshot wounds of the cavities of the body are always dangerous, but not always fatal. In one case of a soldier the ball passed through the right side of the chest, fracturing one rib, and passing through the lung out at the back near the spinal column.

The same man was shot in the left breast, the ball not passing out. This was a serious case. There was great cough, with expectoration of blood in large quantities; bloody froth bubbled out from both wounds; there was also much difficulty of breathing. The right side of the chest was fixed with broad strips of plaster, passed round from over the spinous processes of the vertebræ to the front part of the chest, leaving the wounds exposed: this side of the chest was thus prevented from moving, and gave the lung rest. The opposite side was merely covered with bandages. The patient was supported in a sitting posture. Cold water and lint were applied to the wound. He had muriate of morphia at night to give sleep, and his strength was kept up by nourishing soups. Purgatives were administered when required, and small doses of antimony, in the form of James's powder, were also given along with an expectorant mixture to allay cough. Three weeks after being wounded, and when going on well, he had a violent attack of congestion of the left lung, which was relieved by cupping. This man is now tolerably well, and is invalided from the service. In another case, where the left lung was wounded by the stab of a bayonet, and where the same plan of fixing the chest by plaster along with cold-water applications was adopted, complete recovery followed.

"Much attention must necessarily be given to position in the treatment of gunshot wounds. The head must be kept raised in wounds of the thorax, so as to relieve the breathing. Fixing the chest by means of the adhesive plaster gives great relief to the breathing, and, as I know from experience, changes the condition from torture and extreme agony to comparative comfort.

"In the limbs, wounds of the arteries and large nerves always require amputation; but when the artery alone is wounded, the only operation necessary is to cut down on and tie it: the treatment of course being,—proper position of limb, complete rest, and cooling applications, such as the water-dressing.

"When a ball passes through the carpus or tarsus, even though much smashing of the bone takes place without lesion of an artery, the member may be saved. In five instances of such wounds, three in the carpus and two in the tarsus, both hands and feet were saved by adopting the antiphlogistic plan of treatment with water-dressing, and the removal of dead bone when it is loosened and acting as a foreign body. Occasional poultices are useful in cases of this sort, so as to favour suppuration, being careful to keep them clean and frequently changed. The use of poultices in gunshot wounds is generally to be avoided. They are superseded in their effects by lint and warm water kept constantly trickling over the wound, and only induce putrefaction of the purulent discharge.

"When bleeding takes place from a small artery, it may be stopped by the pressure of a bandage, which always becomes necessary when there is œdema of the part. In much smashing of the small bones, bandage and splint will, in a measure, maintain the shape of the foot or hand, which would otherwise become distorted. I have been induced to adopt as my treatment the topical applications of

cold water, solely on observations among the aboriginal natives of New Zealand, where from time immemorial they always carry their wounded to the edge of some stream, so that a constant supply of water may be at hand; and in the case of fractured bones, after putting them up, they pour water constantly over the injured part, and many have been the cures that have been thus effected.

"Much depends on fresh air as well as fresh water; however, the former is now always supplied in our hospitals, but the latter not so liberally as it should be in surgical cases.

"Many and various have been the instruments constructed for extracting bullets. All sorts of forceps, and with as many improvements and varieties as weeks in the year nearly; but I am sure all will concur with me that with the common bullet forceps any bullet may be extracted, and the only instruments needful for the field are tourniquets, with pad-strap and buckle, scalpel and forceps, with curved needle and silk thread, lint, adhesive plaster, and bandages. By the plan of treatment I have advocated I do not doubt that I have witnessed cures effected where death would have resulted under any other. The plentiful and constant application of cold water to wounds (either gunshot or by the surgeon's knife) will heal them in a much shorter time and with less discomfort to the patient than any other treatment. Every surgeon has his own favourite plan of treatment, but none will ever supersede the cold water.

"It is said that the Minié conical ball makes a more severe wound than the round, but not if it revolves in its long axis, as it then pierces the tissues, not tearing them; the least obstruction to its course will, however, alter its motion; and if it then revolves on its short axis, of course, by its greater length, will create a larger wound than the spherical ball.

"Erysipelas is a frequent result of gunshot wound, and generally of a severe character, causing much sloughing in and around the soft parts, difficult to subdue and always to be dreaded when in a severe form. It often supervenes in cases where the shock has been great, and where a large amount of stimulants have been administered. In such cases where it might be feared that erysipelas would set in, I have given potassio-tartrate of antimony in small doses, as soon as the shock subsided and reaction set in, thus anticipating the attack, if I may so say, and in no case in which it was administered have I seen erysipelas; but, when it does show itself, the usual means of treatment must be adopted, and changing the form of local applications from cold-water to warm. I have never seen a case of gunshot wound in which erysipelas set in, where the shock of the system had not previously been severe, though in two instances the wounds were slight. After amputation, acute bronchitis is to be feared, causing much danger to the patient. In seven cases of secondary and four of primary amputation, I saw acute bronchitis attack the patients, generally commencing about the fifth day after operating, for which no reason could be assigned. The season of the year was in summer, with fine weather, and the patients had every care taken of them previously. An attack of acute bron-

chitis supervening on an amputation or severe gunshot wound is of an aggravated type, and seems less amenable to ordinary treatment than the usual bronchitic affections; and as the purulent discharge from the wound is considerably diminished in quantity, when the first symptoms of the affection show themselves, and is through the whole course of the disease abnormally small in quantity, so, on the return of the pus in increased quantity, the bronchitis gradually disappears, and the wound assumes a more healthy aspect. This occurrence of bronchitis after amputation has been frequently remarked by authors, but I do not know of any cause for it being assigned by them, or any notice taken of the almost total disappearance of the purulent discharge during the attack. The ordinary remedies have been given for the treatment of it; but, till the reappearance of the pus, little benefit seemed to be derived from the usual plan of treatment. Pyæmia is a frequent result of gunshot wounds, but it may often be avoided if proper precautions be taken. Tetanus is more frequently seen now than pyæmia; and for its cure most of the articles in the *Materia Medica* have at some time or other been proposed, but none seems of so much use as the continued use of opiates and chloroform.

"In the course of treatment in gunshot wounds, diarrhœa and dysentery are very frequently most annoying to the patient, and reduce the strength very rapidly. In these cases I have found nothing so speedily beneficial as powdered charcoal in one-ounce doses, five or six times a day, and it has invariably checked the diarrhœa. Through the whole course of treatment, I have found that the tincture of the muriate of iron in small doses, twice daily, has been of much service, and has changed the appearance of the wound in a few days after amputation, when of an unhealthy aspect, to a fine healthy look, where the consistence of pus changed materially. I have given it in thirteen cases of gunshot wounds, from the seventh day for a period of about a month or six weeks, with the most satisfactory results. Of styptics in gunshot wounds the best is tincture of matico poured on lint and passed into the wound, when it has acted as a charm in allaying hæmorrhage, and should always be in the pocket of the surgeon when in the field; but styptics are generally to be avoided, as they seem to induce attacks of erysipelas, or at least favour its production."—*Edin. Med. Journ., March.*

ART. VI.—*Case of Complete Transfixion of the Abdomen by a Bayonet—Recovery.*

By STAFF-SURGEON R. C. TODD,
Army Medical Department.

Private John C—, aged 25, a healthy and vigorous man, joined the 99th Regiment as a volunteer for the China war, on the 17th January, 1860. He had served with the 53rd Foot during the

Indian mutiny, generally enjoyed good health, and had never been wounded.

He was employed in the police, and while riding through the camp on the 3rd of September his pony became refractory, and threw him, and in the fall his bayonet, which had dropped from the scabbard, entered his back, about two inches to the left of the last dorsal vertebra, passed directly through the abdomen, and reappeared about two and a half inches to the left, and below the umbilicus. The weapon was at once withdrawn by Staff Assistant-Surgeon Sainter, who happened to be present. I saw him a few minutes after the accident, when he was perfectly calm and collected, and did not complain of pain.

The treatment consisted of water-dressing, a bandage, opiates, and as perfect rest as the circumstances of the march admitted of. Brandy and arrow-root were given as support, and the urine drawn off by a catheter. By the end of the month he was quite convalescent.

"In this case," says Mr. Todd, "it is clear that the weapon passed through the abdomen without injuring the intestines, or any other important part, except the peritonæum."

In the 'Medical Times and Gazette' of the 6th of May, 1854, there is a somewhat similar case recorded by Mr. Galloway, of the Artillery.—*Army Med. Report*, 1861.

ART. VII.—*Case of Ununited Fracture of Tibia and Fibula.*

By SURGEON J. M. S. FOGO, R.A.

This case occurred in a strong, healthy-looking soldier, aged 25, who suffered fracture of the left leg while at gun-drill. The operative procedure to excite union, and the result, are thus described:—

1st August, 1860.—No real good having resulted from the prolonged application of the starched bandage, the medical officers of the garrison determined, in consultation, that an operation of a less severe character than sawing off the ends of the bone (as recommended by Mr. Syme for false joint) should be performed; more particularly as Mr. Syme's operation was considered unjustifiable in the present instance, in consequence of the fibula being sound.

3rd August, 1860.—The operation was performed, and consisted in introducing a long strong subcutaneous cutting-knife (made for the purpose) under the integument, an inch from the seat of fracture, getting it between the ends of the bone, cutting through any fibrous tissue that had formed, and incising the ends of the bone so severely as to induce inflammation. The leg was afterwards put on a double-inclined splint, which was kept applied for six weeks.

Ten days after the operation, abscess formed about the seat of the inflammation that was set up. The pus found an easy means

of exit by the recently before made wound on the introduction of the knife. The abscess was emptied twice or three times by pressure with the hand, and closed satisfactorily. From some cause phlegmonous erysipelas attacked the limb below the seat of fracture, and gave rise to great constitutional disturbance. Before discovered, as it was hidden by the bandages, it led to the supposition of the existence of pyæmia. Free incisions were made, he was put on brandy and beef-tea, and this complication terminated satisfactorily.

15th September, 1860.—The splint was removed, and the bone was discovered to have united; he describes it himself to be "quite firm," and he could now rest his weight on the leg, although the muscles were much reduced.

31st October, 1860.—He was discharged from the hospital to convalescent duty, to recruit his strength.—*Army Medical Report*, 1861.

ART. VIII.—*Old Gunshot Injury of the Tibia; recent Fracture of the Femur.*

Mr. Tufnell exhibited to the Society the tibia of an old man, aged 78, who, fifty-two years before, at the battle of Busaco, had been wounded by a musket-ball. The bullet had lodged in the cancellated structure of the bone, and been removed from thence by means of a trephine. The cavity formed by the ball had never filled up, but remained an open discharging wound, lined by a pyogenic membrane, and daily secreting a quantity of fetid pus. The integuments were adherent around the edge of this opening. No treatment had been adopted beyond keeping the part clean, and placing over the opening into the bone a piece of linen smeared with grease. The presence of this cavity in the head of the bone had not caused much annoyance, and for five-and-forty years he had laboured regularly as a bricklayer's assistant.

About six years since, finding himself to be getting infirm, he became an in-pensioner of Kilmainham Hospital, where he remained until the period of his death, which arose in the following manner:—Two days before his death he got very drunk, and fell helplessly whilst crossing his room, fracturing the left femur through the trochanter, by the direct violence of the blow. He never rallied, and died in forty hours from the receipt of the injury.

With reference to the cavity in the head of the tibia, it differed greatly from that observed in a somewhat similar case by the late Sir George Ballingall, of Edinburgh, and reported in his 'Military Surgery Museum,' in this respect, viz. that the enlargement of the head of the bone was in his case excessive, whilst here its size was in no way affected.

In Sir George Ballingall's case the individual had lived to a very advanced period of life, labouring, too, for his bread, but working as a boatman; and finding inconvenience from the oozing of pus, he had

plugged the orifice with a wine-bottle cork. Nature, to resent this irritation, had thrown out new bone, whilst absorption, by the pressure of this foreign body, had at the same time been going on from within, necessitating the enlargement of the plug, until, at the period of his death, it required a piece of deal as large as a bung, wrapped round with old linen, to stop the vent.

Each day the old veteran used to take out the stopper, and holding his leg over the side of the boat, wash out the cavity well with sea-water, and then close it for twenty-four hours, when the process was repeated.

Mr. Tufnell was indebted to Dr. William Carte, of the Kilmainham Hospital, for the opportunity of exhibiting this case.—*Reports of the Dublin Pathol. Soc., Dubl. Qu. Jour. Med. Sc.* no. xlviii.

ART. IX.—*Report of the Casualties at the Wimbledon Camp.*

By JOHN G. WESTMACOTT, M.D.,

Surgeon, National Rifle Association; Sen. Assist.-Surg. Lond. Scot. Rifle Volunteers.

The encampment at Wimbledon lasted for twelve days; the weather was fine during the whole time, and the troops were comparatively healthy. Thirty-four cases in all occurred which required treatment. The most serious was that of Michael Fagan (Schol of Musketry), who lost his eye from a bullet splash off the target. Five others were wounded from the same cause, but not seriously. Two suffered bruising and swelling of the shoulder from recoil of the rifle. All except the first case recovered before the camp broke up.

Of diseases there were,—diarrhœa, 7; retention of urine, 2; relaxed sore-throat, 3; ophthalmia, 2; erysipelas of hand, 1; effusion in knee, 2; catarrh, 1; ulcerated tongue, 1; headache with fainting and debility (from the heat), 4. With the exception of the two knee cases, which improved, all the rest became convalescent.

"Some of the diarrhœa cases," says Dr. Westmacott, "were thought to proceed from the water; but I rather think that the ingredients added to the water, together with the damp at night after the scorching day, were the main causes."—*Lancet*, Aug. 1, 1863.

ART. X.—*The Wounded on the Field of Battle.*

"The groans of the wounded after the battle of Solferino and of other battles of the last Italian campaign, were heard of with deep sorrow at Geneva as well as elsewhere. So deeply were the Genevese impressed with the miseries attending the wounded, that they

resolved to form a society for the purpose of administering relief on future occasions of the kind, on a scale equal to the demand. This society has held a meeting at Geneva, to which delegates were invited from all the leading governments of Europe. The invitations were warmly accepted; and England was represented by Inspector-General Rutherford, who was officially sent there; Austria sent Dr. Unger; France, MM. de Pieval and Bondier; Prussia, Drs. Loeffler and Housselle; and so on. A series of resolutions were passed, to the effect that committees should be formed in all countries to provide for the health of the army, and that such committees should be in relation with their respective governments; that in time of peace the committees should organize a system under which they would be ready to act in case of war; that during war the belligerent nations should furnish contingents of volunteer assistants; that the expenses of these assistants should be paid solely by their respective committees; and that they should wear a red cross on a white coat as the badge of their services, etc.—*Brit. Med. Jour.*, Nov. 28.

ART. XI.—*Naval Medical Contributions.*

By ALEXANDER E. MACKAY, M.D., R.N.; F.R.S.E.

Dr. Mackay states that a temporary respite from duty has enabled him to put together some professional notes taken during a rather long and varied service, and the first subject he alludes to in this series of contributions is—

Epilepsy.

This disease is by no means uncommon in the Navy, 223 cases having come under treatment during 1859. As a rule, a single well-authenticated epileptic seizure is held to incapacitate a man for the Naval Service.

In respect of the causes of this disease, Dr. Mackay says:—

“There can be little doubt that in the vast majority of cases the irritation that induces an epileptic seizure is peripheral, and that the habit once acquired, or the condition of the nervous system upon which epilepsy depends once contracted, the very slightest irritation may induce a seizure. A decayed tooth, a slight skin-wound, a worm in the rectum, a piece of food difficult of digestion,—any irritation whatever, in fact, may occasion an epileptic fit. And so also nothing can be better calculated to cause a predisposition to epilepsy to evidence itself, than the atmosphere in which seamen sleep. If we estimate the breathing room which the seaman is allowed on the lower deck of a man-of-war under ordinary circumstances, and when ‘all hands’ are in their hammocks, it will be found to average from 110 to 150 cubic feet. I speak of wooden ships. This, although very small as compared with ordinary dwellings on shore, or with what is considered the necessary space required

for sanitary purposes, would, if proper use was made of it, and there was a constant current of air passing through it, be abundant. But when it is considered that when a seaman is in his hammock his face is within little more than a foot of the deck over his head, and that all the pure air lies in a stratum of probably from three to four feet from the floor of the deck under him, it will be manifest that during the greater portion of the time he is asleep he must be inhaling a most poisonous atmosphere. This is especially the case during calms when the ship is in harbour."

The author gives a case of epileptiform convulsions, which in all probability depended on imperfect oxygenation of the blood; and then proceeds:—

"Another admitted cause of epileptic seizures, and one to which seamen are exposed in various parts of the world, is malaria. We had one or two cases on board H.M.S. Marlborough, the flagship on the Mediterranean station, during last year, which, from their marked periodicity, might with some degree of propriety be referred to this cause. In the month of October, while at Corfu, a case of epilepsy showing very marked periodicity occurred." The two illustrative cases are given, on which the following remarks are made:—

"In both of these cases, and especially in that of the man Rudge, I confess I had some misgivings as to whether the quinine had not had its share in inducing the first attack. The marked periodicity, however, of the headaches under which he had previously suffered, indicated very decidedly the propriety of its administration; and I regret that his removal from the ship prevented me giving it that full trial which I should have done, and which had been decidedly attended with beneficial results up to the time of his leaving us.

"In Young's case, although the attacks from being tertian became quotidian, they were reduced in severity in a very remarkable manner, and the proof that they were not in any way dependent upon the irritation caused by the quinine, was evidenced by the fact, that when cinchonism was established, the headaches and the fits entirely disappeared."

In the 'Year-book of Medicine and Surgery for 1862,' the following notice is taken of Dr. Payne's observations "On Epilepsy as a Result of Malarious Affection:"—"This form, in its paroxysms, resembles epilepsy, but admits of a much more hopeful prognosis. It follows, but sometimes after a long period, on malarious infection, which may not have shown itself in paroxysms of ague at any period; so that the convulsive seizures may be the only active symptoms. Cases of infantile convulsions are frequently seen in Calcutta, which stand in very close relation to malarious epilepsy. In all these quinine affords a cure. Payne considers that an hydremic state of the blood is the most important element in the pathology of this class of disorder. He praises the nitric acid bath as the best therapeutic agent, and corroborates Dr. Hammond's statement of its antiperiodic action."

Romberg, in his 'Diseases of the Nervous System' (Syd. Soc. Edit., vol. ii. page 205), mentions the case of a young girl, in whom the fits at the commencement of the disease occurred punctually

every other day at 5 P.M.; and he says, "Quinine had no other effect than that of effacing the regular type." He mentions also another case, where the attacks "assumed a definite type during the use of the sea-baths. They took place uniformly between 8 and half-past 8 o'clock in the morning on every seventh day. This type disappeared as soon as the patient had left the watering-place."

The concluding remarks are as follows:—"An epileptic subject on board ship must always be a source of anxiety to a medical officer. The facilities which abound there for accidents of the gravest kind, and the great difficulty of obviating the risks incurred by epileptics in consequence, cannot fail to render such cases objects of much care and watchfulness. It is not to be forgotten, moreover, that however rare it may be, mania may suddenly develop itself in an epileptic subject; and that, surrounded as men are on board a ship of war with weapons of destruction, the most fearful consequences might result in such a case before the maniac could be secured. Without magnifying the risks (unquestionably small) of such an accident occurring, they ought on no account to be overlooked. While in H.M.S. Royal Albert, I invalidated a young officer, a master's assistant, for epilepsy. The disease had followed upon a severe gunshot wound in the groin, accidentally sustained two years previously. Some time after he was invalidated, in a paroxysm of mania he deliberately shot his own brother. Such a case as this should render us very careful to exclude all suspicious cases from those which might otherwise be retained for observation. In this case the fits were very frequent, very violent, and of long duration."—*Edin. Med. Journ.*, Oct., 1863.

ART. XII.—*Statistics of Venereal Diseases.*

Mr. Franklin, Surgeon to the 10th Foot, in a communication to the 'Times,' refers as follows to those diseases of a special type which are the bane of the British soldier:—

Professor Maclean, in his introductory lecture at the Royal Victoria Hospital, Netley, states that the ills which arise from the diseases in question, rendering the soldier prematurely old and inefficient, amount to 50 per cent. In judging of the health of troops, the following points must be considered, viz. length of service; length of tropical service; age of the man; whether married or single. Among British soldiers, as age increases, so the mortality, in comparison with the civil population, increases to an immense degree; and almost all the rheumatism, and, in fact, many other diseases, are traceable to the soldier having been the victim of that class of diseases of which I speak. If not, how is it that this is not the case in Continental armies, as the French, Prussian, and Austrian; and why is it that in the Danish and Hanoverian armies the case is reversed, and the soldier, as age advances, becomes absolutely more healthy than the civil population? In the English Infantry, the average number of sick is about 50 per 1000 men; in the English

cavalry, a little less ; in the Royal Artillery, a little more ; and the Military Train and dépôt battalions, at most 7000 men, furnish about 1400 admissions per annum, on account of these two corps being chiefly composed of old and young soldiers. Striking an average, in the British Army, the number of sick is nearly 55 per 1000 of strength ; in the French Army, 45 ; in the Prussian, 47 ; and in the Austrian, 48. Our average time in hospital is 17 to 20 or 21 days ; in the French Army, it is 16 days ; in the Prussian Army, it is 16 days ; and in the Austrian Army, it is 17 days. But the special diseases which constitute the chief admissions in our Army keep men a long time under treatment ; and this serves to explain why they are longer in hospital than is the case on the Continent. These diseases in the English Army run up the admissions to from 350 to 450 per annum, or nearly one-half, of which one-third are of lighter, and two-thirds of theseverer kind. The French Army is very fortunate in this respect. Taking the garrison of Paris and comparing it with some of ours, we find the admissions from these diseases were :—In 1858, Paris, 24 per 1000 men ; Aldershott, 411 per 1000 men ; and Woolwich, 512 per 1000 men. Sometimes in Paris it fell to 16 per 1000 men, while in England it was 20 times as great ; and in the worst garrison—viz. Marseilles—it never reached above 113, or considerably less than one-third of our number even at Aldershott. And there is reason to believe, that if it were possible to carry out police regulations, establish special hospitals in our garrison towns, and occupy the men more with their respective trades, that an immense saving in men and money would be the result ; and that in the event of a war we should have a fine, healthy, serviceable body of men, instead of the wretched, ill-formed boys who fill up our regiments after a little drain has taken place ; boys who, if they enter at eighteen, have really many years to wait before they become completely formed and able-bodied men.

ART. XIII.—*Observations on Pulmonary Diseases, and their Relation to Syphilis.*

By DAVID MILROY, M.D.,

Assistant-Surgeon, 30th Regiment.

“Some time has elapsed since the attention of the medical profession and the public was called to the alarming loss for many years sustained by the Army from the ravages of Pulmonary Consumption. Various causes were then assigned to account for the prevalence of this malady, of which over-crowding in barrack-rooms, night-duty, and want of variety in diet, appear to have been the most favoured. But although it was known that, while plthisis thinned the ranks by death and invaliding, a most important deduction from the available strength of the Army was occasioned by the number of men constantly under treatment for venereal complaints, little importance was attached to what was regarded as a mere coincidence. In the

minutes of the evidence taken by the Commission appointed to inquire into the Sanitary Condition of the Army, there is, however, a statement by Dr. Balfour, Deputy Inspector-General of Hospitals, which shows that this officer's attention had been directed to the subject. 'I think,' he says, "that another great cause of pulmonary disease among the Guards is the amount of syphilis, which I have not the least doubt, in men who have any predisposition to tubercular disease, is a very fertile cause of its being called into active operation."

Dr. Milroy takes the cases of Pulmonary Consumption (died and invalided) in the 30th Regiment, while in the United Kingdom, from September, 1857, to June, 1861.

It appears "that out of 50 men who died or were invalided for phthisis, or for affections with which it co-existed, evidence of deterioration by syphilis existed in no less than 43. In 4, the proof was insufficient, while in three others (although in two at least there was reason to suspect that that disease might have played a part in inducing debility), no evidence could be produced to satisfy me that it had done so. The cases I shall relate will sufficiently convey what I mean by the term *deterioration of system*. . . .

"Happily all cases of secondary syphilitic disease do not terminate in phthisis. What, then, are the causes which superinduce the one cachexy on the other? A very plausible theory is that syphilis is most severe in subjects predisposed to phthisis, or, in other words, that the scrofulous individual is most liable to severe attacks of syphilis.* On the other hand, we may throw the onus on the shoulders of mercury; or, with still more appearance of probability, it may be said that as the use of this mineral is known to be ill borne by scrofulous individuals, its administration in such cases may lead to tubercular deposition in the lungs."

Of other causes, over-crowding and night-duty no doubt still operate injuriously at times, but he considers the most influential cause to be habits of dissipation, a large proportion of the cases having occurred among hard-drinkers.

Having alluded briefly to the etiology of the disease, he proceeds to notice its history and diagnosis as illustrated in a series of cases which he details. He then observes:—

"In all these cases the history is very similar; the patient contracts a sore, frequently of the hard kind, and, in a great many instances, when either on furlough, intoxicated, or in some other unfavourable hygienic condition. Indeed, in a large proportion of instances, the sore was discovered when the men were prisoners in the guard-room for drunkenness, or, what very often amounts to the same, absence without leave. Convalescence in most was tardy, although in a few cases the reverse, and the existence of suppurating bubo was common, while in most of those in whom this was not pre-

* Mr. Acton says, "It might be said with more truth that the consumptive individual presents the most severe case of syphilis; still I am ready to admit that when syphilis occurs in delicate persons, it may develop the seeds of scrofula, and in this it will be aided by the injudicious use of mercury."

sent, there was some degree of hardness perceptible in the groins for months, or even years. The character of the secondary skin-affection varied, in the worst cases it was usually squamous. Frequently, as the first crop of blotches was dying away, signs of condensation at the apices of the lungs were manifested; but, in a large proportion, the first intimation of such a condition was given by the men requiring treatment for an attack of bronchial inflammation, or rheumatic pains."

"Considering," he says, "the intimate connection there is between the mucous surface of the respiratory organs and the skin, and the proneness of the throat (that part of the former membrane in which we can with most facility observe any change) to become affected, we cannot wonder that syphilis should frequently show the earliest indications of its presence in the system by affecting the lining membrane of the bronchi. If, then, syphilitic matter be deposited in the one locality, it may also in the other; and we can easily imagine that the inflammation thereby set up may cause the pouring out of fresh material of the same kind, even to such an extent as to block up the smaller tubes, and to simulate phthisis. I am disposed to believe that many cases which present the characters of the latter disease, are really instances of mere syphilitic deposit. I might easily detail cases illustrative of this view, but am unwilling to protract this essay unduly. There are in the 30th Regiment, at the present time, three men nearly equal in height, each measuring about 5 feet 11 inches. Each of them contracted syphilis, and each of them presented all the stethoscopic signs of phthisis for about three years. Two of them I had reason to fear would have succumbed, but they are now enjoying average health, while the condition of their lungs is becoming more satisfactory. There are likewise others in whom the conformation of the body is less indicative of predisposition to tubercular deposits, where the progress towards recovery has been much more rapid."

As regards the *diagnosis* of syphilitic pulmonary disease, we must depend mainly on the history of the disease. Our author observes as a diagnostic symptom, that when syphilis manifests itself in the lungs to such an extent as to resemble tubercular deposition in its symptoms, there is, in the majority of the cases, a thickening of the periosteum of the head of one or both the clavicles, and of the perichondrium of one or more of the upper costal cartilages, with frequently a tumefaction of the soft parts between them and the skin.

The *prognosis* in these lung affections may be pronounced good as long as the lesion is merely syphilitic.

Under the head of "Pathology," he states,—"It is reasonable to suppose that many soldiers have an hereditary or acquired predisposition to tubercular deposit, on the application of any depressing agency. Such an one is found in syphilis, and the origin of phthisis in such cases is easily thus accounted for. There are, I believe from reasons I will proceed to show, other cases where the deposit is not at first tubercular, but syphilitic. This may either be converted into tubercle, or by its presence may give rise to such inflammation as will lead to the deposition of that substance." Dr. Milroy

considers bronchitis a very powerful agent in causing the deposition of tubercle, but he believes that in such cases it is frequently originated by the previous pouring out of syphilitic matter on the mucous surface of the smaller bronchial tubes. In an acute case of this kind, it will be found that after bleeding there appears a copious eruption, often combining lichenous and squamous forms, with complete relief to the chest, showing additional evidence in favour of the analogy between syphilitic bronchitis and that of the exanthemata.

In regard to *treatment*, Dr. Milroy says this depends upon our diagnosis :—

“1. If the case present the usual appearances of phthisis, due only to the inroad of tubercle or the weakening of the system through syphilis, then the usual plan of treatment may be pursued ; but,

“2. If there appear to be a mere deposition of syphilitic matter, such remedies seem to me to be unable to cope with the affection. We must then use those best adapted for the syphilitic diathesis. First among these, in point of notability, ranks mercury, which, from a quotation already made it will be observed that an experienced physician recommends, even at the tertiary epoch. I am inclined, however, to agree with the following remark of Mr. Acton's :— ‘When we have reason to suspect the existence of syphilitic tubercles in the lungs, recourse should be had to iodide of potassium, and mercury must be used most sparingly. When we have to treat true syphilitic phthisis, the surgeon should treat the patient on general principles, etc.’”

When the lungs are affected shortly after the primary sore, he has found great benefit to arise from the use of mercury. He gives a case in point, and thus concludes :—

“I would not have it understood that I advise mercury in all cases of this kind; in fact, I am not in the habit of using it in any case of secondary syphilis, unless I see peculiar reasons for its administration. The same remarks apply to the use of this mineral in syphilitic bronchitis, except that in this affection its influence is better marked. Cod-liver oil, so justly esteemed as a mode of conveying fatty matter into the system in phthisis, may be tried ; but in cases in which the deposition of tubercle has been preceded by that of syphilitic matter, I entertain but little opinion of its usefulness. In most of these cases, in reality, the appetite is comparatively but little impaired.

“In the way of prevention, much may be accomplished. Every medical officer knows the effect of confinement in hospital. The patient must necessarily be subject to this ; let it, therefore, be made as little injurious as possible. It is sometimes imagined that any accommodation is sufficient for venereal patients, a great error, as I know of scarcely any disease which more urgently requires that plenty of cubic space be afforded. Under the new regulations on this subject, little will remain to be desired ; but, besides space in the hospital ward, I believe that the patient should be compelled to seek fresh air outside its doors ; in fact, that he should take exercise.”—*Army Med. Report.*

ART. XIV.—*Notice of Pulmonary Lesions associated with Syphilis.*

BY W. AITKEN, M.D.,
Professor of Pathology, Army Medical School.

After some preliminary remarks, Dr. Aitken alludes to the great advances which have been made in the pathology of syphilis, and points out that in its study the *pure* surgeon and the *pure* physician must each condescend to forget his purity, for the relations of the syphilitic poison are now seen to be so vast and complicated that the physician and the surgeon must each combine their knowledge before the many obscure points in the pathology of syphilis can be fully cleared up. He then says:—

“The more remote effects of syphilis, concerning which definite information is very much desired, may be embraced in the two following heads:—

“(1.) The constitutional cachexia or specific condition of ill-health, associated with (2) certain definite anatomical lesions, and especially the growth of new material from the elements of connective tissue, mainly assuming the form of a ‘gummatous tumour’ or nodule; of which the node on the shin-bone is the most common and familiar type.

“These nodes are now known not to be confined to the bones. They are developed in the submucous and subcutaneous connective tissues, in the liver, in the lungs, in the brain, in the heart, in the common muscles, in the testicles, and in the delicate tissues of the eye.

“The constitutional tendencies of the individual also materially influence the phenomena which supervene during syphilis, *e. g.* gout, rheumatism, and tuberculosis modify the growth of syphilitic lesions, and the degenerations associated with the syphilitic cachexia, especially as to site.”

The following extracts will convey some idea of the importance and scientific character of our author’s inquiries.

“The lesions just noticed eventually assume a great variety of anatomical forms; but in the first instance they are to be recognized in the typical form of *nodes* or *gummatous nodules*. The minute structure of these gummatous nodules has been closely examined by many observers. This gummatous nodule consists of a growth of elements which leads to the development of an elastic tumour composed of a well-defined tissue, and the elements of which are extremely minute. The tumour takes origin from the connective tissue or the analogues of such; and hence the universality of the site of syphilitic lesions. When these are sufficiently large to attract attention—as in the form of a node on the shin-bone, or on some part of the true skin—they are small, solid, pale knots, like a hard kernel, about the size of a pea. They are generally first seen on some part of the true skin or subcutaneous or submucous tissue; and when the tissue in which they happen to grow is sufficiently lax, they grow to a considerable size, and convey to the touch a sen-

sation as if they were filled with gum. Repeated examinations of this growth show that in its gelatinous or soft state it arises from a proliferation of nuclei amongst the elements of the connective tissue, not unlike the formation of granulations in a wound. The component cell-elements appear as round, oval, or oat-shaped particles imbedded in a matrix of fine connective tissue of a granular character, and tending to fibrillation. The cell-elements are a little larger than blood-globules, and are distinctly granular in their interior when mature."

The following cases, selected from the records of dissection at Fort Pitt, are mainly intended to illustrate the morbid anatomy of the lung-lesions which are associated with a distinct history of syphilis.

Morton, Sauvages, Portal, Morgagni, and more recently Graves, Stokes, Ricord, M'Carthy, Walshe, Wilks, Virchow, and Munk, have all described, with uniformity and distinctness, pulmonic lesions in cases of syphilis.

The following are the kinds of lesions which predominate:—

1. *Evidences of Inflammation of the Mucous Membrane of the Bronchial Tubes.*—In such cases, bronchial irritation, with fever in many cases, precedes the skin lesions, and may disappear wholly or partially when the skin lesions are established. On the other hand, if the syphilitic eruption suddenly disappears, bronchitis may ensue. Walshe records well-marked instances of this; and it is a circumstance to be looked for amongst soldiers who, having recovered from a primary syphilitic sore, are apt to be exposed to the risk of bronchitis when mounting guard soon after being discharged to duty. Secondary symptoms and pulmonic lesions are then apt to date their commencement; and all the general symptoms of phthisis may supervene, and yet no tubercle in the lung may be developed; but chronic bronchitis remains persistent. On this point Dr. Walshe observes, that in the persistence of the general symptoms there "is assuredly enough to create a strong suspicion of the existence of tubercle in the lungs, taken in conjunction with the indubitable tendency of syphilis *plus* mercury to induce the outbreak of phthisis in a person having the requisite constitutional aptitude. How are the cases to be distinguished? By the total want of accordance between the physical signs and the constitutional symptoms; the patient with syphilitic bronchitis has neither consolidation signs, nor, *à fortiori*, the evidences of excavation. But there is a curious source of difficulty which sometimes starts up in these cases, and renders doubt imperative: the infra-clavicular ribs and clavicle thicken from periostitis and produce dulness under percussion, which cannot with positiveness be distinguished from that of tubercle within the lung. Here the observer must wait for events to clear up the diagnosis."—*Diseases of the Lungs*, p. 233.

2. *The Occurrence of Gummatous Nodules in the Pulmonary Substance.*—These are, in the first instance, of the same histological constitution as the well-known node of the shin, or the subcutaneous product described by Ricord, Bärensprung, Virchow, and M'Carthy. They form especially towards the periphery and bases

of the lungs. In the former site they resemble nodules of lobular pneumonia. They may soften and be eliminated much in the manner of tubercle, although they may have at first a consistence like scirrhus. It is concerning those which soften in this way that Ricord gives the warning, "not to confound suppuration of a few syphilitic nodules of the lungs with phthisis." Regarding these gummatous nodules, Dr. Walshe observes: "I can find no positive answer to the query, Do these gummata ever form, independently of other tertiary evidences of syphilis in the bones and cellular tissue? If they do, their diagnosis must be infinitely difficult—difficult, indeed, under all circumstances; for the physical signs can be none other than those of solidification followed by softening and excavation, while the local and general symptoms closely simulate those of phthisis."—*Diseases of the Lungs*, p. 431.

3. *The Occurrence of Gummatous Nodules in various Stages of Growth and Degeneration, associated with the Miliary Deposit of Tubercle.*—In such cases the history of events in the illnesses of the patient may be found to correspond more or less closely with the appearances seen in the lungs,—appearances which distinctly indicate the formation of lesions commenced at different dates,—appearances which denote the occurrence of lesions in crops, or as a succession of events which may be illustrated by the history of the symptoms during life, or of the illnesses from which the soldier may have suffered.

Growths of a form similar to the node which result from cancer are in general to be recognized by the juice expressed from them. In the gummatous nodule we have no juice, and the cell-elements seen in cancer are generally so diversified in their form and mode of growth as not to be easily mistaken. The gummatous nodule is uniform as to the size and form of its cell-elements, and forms growths less highly supplied with blood-vessels than cancers. Cancers also tend to infiltrate and involve neighbouring textures; the gummatous nodule remains isolated and distinct.

By way of elimination, therefore, and by duly observing the history of the case, we are generally able to recognize the nature of such growths, and to assign to them their proper place in pathology.

The gummatous nodule has now been recognized and described in almost all the solid viscera of the body. Symmetrical development is a most constant characteristic. If a node grows on one shin, it is probably also to be found advancing on the other; if found in one testicle, it is extremely probable that it will be seen in the same relative spot in the other. Numerous examples of this symmetrical development may be seen preserved in the Pathological Museum of the Department. During the growth of the nodule, proliferation advances slowly, and a gluey-like material forms, which constitutes the inner cell-material of the nodule. If near the surface, such a nodule is apt to melt down, soften, open, and ulcerate; and such a result seems to be associated with other evidence of active constitutional disease, such as exists with a predisposition to tubercle, or with its actual existence. The tumour, however, continues, gelatinous and coherent if it is enclosed in a dense part or is deeply

seated, as in gummata of the periosteum, scalp, brain, liver, testicle, lungs, and heart, if constitutional disease remains latent or inactive. Fatty degeneration may also eventually occur in the gummatous nodule, and eventually lead to its absorption; or its absorption takes place as a natural process of cure, the changes of which are not exactly known. We know only that the node on the shin-bone not seldom disappears from view and does not return.

For reasons already stated, phthisis must be regarded in many cases as the product of syphilis; and I would fully indorse the statement of Dr. Balfour, from what I have seen in the *post-mortem* rooms, when he says that a great cause of pulmonary disease among the Guards is the amount of syphilis, which he has not the least doubt is a very fertile cause of its being called into active operation.

Our notice of the cases must be confined to the mere heading:—

CASE I.—Syphilis, nodular secondary growth in the lungs and bones, iritis, ophthalmia, anasarca, amyloid degeneration of the kidney: death.

CASE II.—Syphilis; paralysis; degeneration of corpora olivaria; ulceration of uvula, tongue, and larynx; nodes in the lungs and liver; necrotic centres in the bones of the skull: death.

CASE III.—Syphilis, phthisis, pulmonary tubercles, gummatous nodules, amyloid degeneration: death.

CASE IV.—Syphilis, bronchitis, nephria, deposit in the lung, amyloid liver and cicatricial loss of substance, atrophy with amyloid degeneration of the kidney: death.

CASE V.—Syphilis, bronchitis, ulcers, rheumatism, hæmoptysis, phthisis, amyloid degeneration: death.

CASE VI.—Syphilis, hæmoptysis, bronchitis, tubercle in the lungs, and isolated nodular growths: death.

CASE VII.—Syphilis, gonorrhœa, gleet, phthisis, isolated nodular growths in the lungs: death.

CASE VIII.—Syphilis, general consolidation of the lungs, with minute cavities, cicatricial-like marks, with puckered contractions on the pleural surface, lesions of skull bones, similar to those from syphilis: death.—*Army Med. Report.*

ART. XV.—*Practical Remarks upon the Prevalence and Treatment of Syphilis.*

BY JEFFERY MARSTON, M.D.,
Royal Artillery.

In this paper the treatment of syphilis is very ably and fully discussed, but our limits oblige us to confine our notice to the following very sensible remarks on the prevalence of the disease.

“So long as the public will not entertain any plan of legislative enactment with the view of controlling the spread of syphilis, it would be futile to dwell upon the importance of sanitary measures directed to the examination and removal of affected women.

“In large towns, indeed, it would be difficult to carry out efficiently any measures to this end; but it is not so within the limited areas of smaller garrison towns, particularly abroad. The experience obtained in Belgium and elsewhere of the control and diminution of syphilitic disease by these measures is quite parallel with my own observations. In Malta and Gibraltar, where measures were stringently enforced, there was almost entire immunity from syphilitic disease amid the troops; and when, as in the former station, these sanitary measures were discontinued, disease became so quickly and widely prevalent as to necessitate a recurrence to them.

“Looking to the immense amount of disease and want entailed by these disorders, the great expense incurred by the Government from their widely-spread prevalence among troops, and the subsequent loss of health and strength, as well as the congenital or inherited diseases to be traced to these causes, it seems wonderful that so little should be done to prevent their spread, and that the desire should be so determined to ignore their existence.

“The number of hospitals and means in Great Britain for the treatment of so highly contagious a disease is very small and quite inadequate.

“Persons out of the Army can form but little idea of the amount of disease and the modifications of health induced by syphilis.

“The limits within which any suggestions can be offered are practically narrowed to such as can affect the soldier. Military hospitals—in Britain, at any rate—would be comparatively empty were it not for diseases of this kind. As at present, the liberty of the subject is carried to its furthest extent, and made to press unfairly upon the more steady soldier. In all benefit clubs, it is a recognized custom that no member shall obtain any advantages for diseases of his own producing and within his own control. In the Army, it might surely be regarded as a breach of contract when a soldier escapes his duties by his own immoralities. A soldier whilst in hospital with such a disease pays no more than another suffering from one the direct result of the execution of his duties. Moreover, for every day so spent, duties are escaped, which fall upon the other and effective men, upon whom therefore, practically, the burden falls. It often happens, also, that a soldier, by means of such diseases, is enabled to escape some punishment awarded to him at a date prior to the appearance of it. These facts seem to carry with them their own remedies.

“It would be utopian to suppose that we shall be able to *eradicate* diseases of this nature by any efforts directed to the education and amusement of the soldier. No doubt the practical workers in sanitary science have done much, and much more remains to be done; but we must not forget that diseases resulting from immoralities are common enough among persons as far removed from the soldier, in these respects, as possible. If not so common, obviously, the one class possess means by which they can more easily guard against and escape these evils than can the other.

“It is well that those who expect so much from the education and elevation of the soldier, should remember that the life of a

soldier is altogether peculiar; *e. g.* he enters the army as a very young man, and is not an old one when he leaves it. During this period of life the passions are not by any means at their weakest. The life of a soldier is a non-natural one of celibacy. It would be incompatible with the nature of his occupation for the soldier to be married, even were it practicable to find sufficient barrack accommodation. Every one will perceive that such a state of things must entail a good deal of immorality.

"The married soldiers, however much they may encumber a regiment upon the march, or in barracks, do not swell the list of occupants of military hospitals and prisons.

"A soldier's life contrasts with that of a civilian at the very commencement. The 'raw material' of our Army is composed, in some part, of men unfitted for occupations requiring steady habits and perseverance—if not worse; and the discipline of the Army exerts a great influence in the removal and repression of much of the crime which would otherwise elsewhere occur. The plan of enlistment is but too often a scandal. The system of barrack life is such, that a man is contaminated by the evils around him; it almost necessarily entails a loss of modesty; and individuals obtain that kind of mutual support and sympathy from the conduct of others, to which we can find no parallel in civil life."

ART. XVI.—*Report upon Syphilis, with reference to the more Mixed and Unusual Forms of the Primary Symptoms.*

BY JEFFERY A. MARSTON, M.D., R.A.

"The author of this paper is an army medical officer, and he treats of syphilis with especial reference to its more unusual, mixed, and anomalous forms. From Dr. Marston's experience, he is led to believe that the etiology and pathology of the disease are by no means so well-defined as the authors of the French school maintain. In model cases it is true that the distinctions between an infecting and a non-infecting sore can be easily drawn; but mixed cases frequently occur, offering great difficulty in their diagnosis. Dr. Marston arranges his materials under six heads: viz. 1. The varieties of infecting sore. 2. The results of auto-inoculation. 3. The occurrence of syphilitic infection after suppurating bubo. 4. The occurrence of constitutional symptoms following an urethral discharge clinically identical with gonorrhœa. 5. The bubon d'emblée. 6. The periods of incubation preceding the appearance of the two kinds of venereal sores, in the absence of any proof that we can guarantee against constitutional infection by any abortive treatment applied to the primary syphilitic lesion. In reference to the latter point, Dr. Marston relates three cases in which syphilitic sores were treated at the earliest possible period by the application of nitric acid, but in which, nevertheless, secondary symptoms supervened."—*Med. Chir. Trans.*, vol. xlv.; and *Brit. and For. Med. Chir. Rev.*, July, 1863.

ART. XVII.—*Report upon Syphilis, in its Manifestations as a Constitutional Disease.*

By JEFFERY A. MARSTON, M.D.,
Royal Artillery.

After referring to a previous paper,* the writer gave a short *résumé* of prevailing doctrines. Upon the subject of one attack of true syphilis affording an immunity against a second, the writer made some remarks illustrative of its general truth, to which, however, there were a few rare exceptions. Under this category he gave a case, in which a soldier had been treated twice during eighteen months for indurated chancre.

The writer next briefly reverted to the comparatively modern reaction relative to the contagious character of secondary syphilis. He then passed to the subject of secondary sores upon the penis, commencing either by a recrudescence in the cicatrix of a former sore, or upon some part not previously diseased. These he described under three heads,—1. Such secondary lesions may commence as a circumscribed patch of purple or bluish redness, very slightly raised, from which the epithelium is shed, the surface becoming abraded, cracked, or covered with ill-formed and degenerating epithelial products. 2. This purplish-red spot, after becoming raised, takes on a chronic ulceration, similar to that of the scooped-out ulcers seen upon the tonsils. The first variety corresponds with, and often accompanies, a squamous or erythematous exanthem; the latter appears allied to the syphilitic tubercle, the ulceration of which plays so important a part in the evolution of syphilis in some subjects. 3. The third variety appears as a persistence of the ulceration, or an unhealed condition of the chancre, which becomes transformed into a mucous tubercle, as described by Ricord. Of these he gave illustrative cases.

Upon syphilitic infection, contracted from some other source than contact with a virus obtained from a primary lesion, the following were cited as in all probability instances:—

1. A wife and two children. The former had syphilitic nodes and an ulcerating tubercle upon the lower extremity. Of the latter (who slept with her) one was an infant, in whom the disease was probably hereditary, though not congenital in its outward manifestations; the other was a girl of five years, with anæmia, non-ulcerated sore-throat, engorged post-cervical glands, cutaneous syphilida of trunk, with psoriasis palmaris. All had very restless nights. The husband lived separately, and was healthy.

2. The subject of disease was a military servant, a married man, who suffered from secondary and tertiary symptoms after intercourse with a woman known to be constitutionally syphilitic. Attempts to trace any primary lesion in this man failed.

* "Syphilis, with reference to the more mixed and unusual forms of the Primary Symptoms." ('Medico-Chirurgical Transactions,' vol. xlv.)

3. The infection of a female by labial contact with diseased secretions from secondary lesions upon the lips of a male. The disease so produced in the female commenced as an irritable and indolent fissure upon the mucous membrane of the lower lip.

The writer next adverted to the evolution and succession of syphilitic symptoms as ordinarily witnessed among soldiers.

Under the cutaneous affections, he particularly remarked upon the mixed character of these; the majority of cases partaking of more than one affection at the same time, and upon the same or different parts of the body. Although great modifications in the future health and efficiency of the soldier were, doubtless, the result of syphilitic infection, yet cases of the more severe and intractable forms of constitutional disease were not very common.

With the view to prognosis, the writer said it was important to inquire what relation, if any, has the severity of the primaries to those of the latter symptoms? From a consideration of his own observations, he inferred that the following were as approximate expressions to the truth as the facts warranted:—

1. The greater the induration, and the longer the period during which primaries remain unhealed, the more certain will it be that the constitutional infection will be severe.

2. The amount of ulceration, etc., of the primary sore stands in some relation to the worse and more intractable forms of secondary lesions—*e. g.* the pustular, erythematous, and rupitic eruptions,—the unhealthy ulcerations, nodes, and gummatous tumours.

The writer then passed to those cases in which there was an irregular evolution and succession of the stages and symptoms of syphilitic disease. Assuming that when an indurated sore has been recognized, some specific treatment has been employed, and that soldiers are exposed to changes of climate, etc., we might infer, what is actually the case, that the constitutional symptoms would be irregular in their appearance and varied in their kind. As illustrative of his remarks, the author cited:—

1. A case of Hunterian chancre unhealed at the end of three months, when syphilitic rheumatism, and a node upon the left parietal bone appeared.

2. A case in which, three years after a sore upon the external integument of the penis, a soldier suffered from two attacks of jaundice, anæmia, nodes upon the tibiæ, synovitis of left knee-joint, and rheumatism, without any history of secondary symptoms having been traced.

3. A case of repeated epileptic attacks, with violent pain in the head (upon which a node appeared), cured by specific treatment. The subject of the disease had suffered from repeated attacks of venereal disease, but not from any primary disease for two years and a half previously.

4. A case of chronic dyspepsia, slight icterus, pseudo-epilepsy, and paralysis of the third nerve. History of syphilitic attack two years before. Treated then by mercury. No history of secondary symptoms elicited by close questioning.

5. A case of osteocopic pains, paralysis of seventh nerve, followed

by lichen and iritis, in a man undischarged from hospital for primary disease.

6. One of secondary syphilis, in which symptoms of intracranial inflammation appeared, followed by marked alteration of manner, loss of memory, dirty habits, etc.

7. Case in which there were—first, symptoms indicative of venous lymphatic absorption of pus, or some of the diseased products of secondary lesions; second, ocular disease, paralysis of third nerve, and other symptoms indicative of intracranial mischief.

The writer adduced also other cases, and made some remarks upon the character and nature of these nerve lesions.

As illustrative of the long interval which sometimes ensues between an attack of primary and secondary symptoms, he adduced the following:—

8. Lepra, psoriasis, and syphilitic cachexia, in a man who had not suffered from primary disease for nearly five years; he had been married for three, and his offspring were healthy.

9. Syphilitic cachexia, etc., in an infant, who died of the disease; the father not having had primary symptoms for four years, and having been subsequently the parent of one healthy child.

The author then spoke of the occasional latency of the syphilitic element, until some other disease or impairment of health appeared, which seemed to act as an exciting cause to its manifestation. He also remarked upon the modifications of diseases, or convalescence from them, that are sometimes apparently the result of a prior syphilitic infection. In support of the foregoing he gave some cases.

The paper concluded by stating the experience of the author to show that the effect of the Mediterranean climate upon the syphilitic diathesis was very inimical during the summer months.—*Proc. Roy. Med. Chir. Soc., Feb. 10, 1863.*

ART. XVIII.—*The Test of Constitutional Syphilis.*

By ASSISTANT-SURGEON W. C. BRODRICK, M.D.,

Agency Surgeon, Indore.

“In No. X. of the ‘Madras Quarterly Journal,’ I recommended to readers the employment of certain means of diagnosis whereby to ascertain the existence of acquired syphilitic taint, in cases where such relation might be unsuspected by the medical attendant, and denied by the patient.

“In the present paper I propose to exhibit a series of cases, the first sixty-two that I have noted since the publication of previous remarks, not selected with a view to establish my particular views, but taken in the order in which they presented themselves for treatment, and honestly reported.

“I hope that these will justify the confidence with which I offered the previous remarks, and that they will serve to recommend my ‘tests for syphilis’ to the profession more than unsupported assertions can ever be expected to do.”

Dr. Brodrick gives, in a tabulated form, sixty-two cases; in fifty-six of which substernal tenderness was present in a greater or less degree: it was absent in five only. This, he thinks, suffices to show the almost universality of the test, and stamps its diagnostic value in obscure cases.—*Medr. Quar. Jour. Medr. Sc., July, 1863.*

ART. XIX.—*Gonorrhæal Rheumatism.*

By JEFFERY A. MARSTON, M.D.,

Royal Artillery.

After some preliminary remarks regarding the nature and causes of this peculiar complication of rheumatism, Dr. Marston observes that it appears under two forms, like ordinary rheumatism, according as it attacks the fibrous tissues and muscles, or the synovial membranes of joints. The first occurs as a subacute inflammation of the fibrous tissues of some part of a limb; an affection of the sclerotic and fibrous coats of the eye may be included in this form. The second comprehends the arthritic. Of the various joints attacked, the knee is the most frequently so. These two forms may be combined. The author corroborates the experience of Ricord, that a painful affection of the plantar region is not uncommon.

The disease differs from ordinary rheumatism in wanting the inflammatory fever and the marked tendency to sweating, in the infrequency of an extension to various joints, and in the freedom from cardiac complication. It appears, as a rule, after the inflammatory stage of gonorrhœa has subsided.

Dr. Marston next considers the symptoms in detail, and points out that these affections are eminently chronic, prone to relapses, and but little amenable to treatment. Fortunately, however, they generally terminate by resolution and absorption of any effused fluid.

It is remarked as singular how rarely the disease is met with among soldiers.

In respect to treatment, the first object to be attained is cure of the urethral discharge, by means of injections, and the occasional use of a bougie.

The remedies so useful in rheumatic affections may be dismissed as useless.

Amend the general health by attention to diet and régime. The muriated tincture of iron given after meals is occasionally very useful with this end in view.

The Iodide or Bichloride of Mercury, in tincture of bark is recommended, Iodide of Potassium being given at the same time, if it does not keep up the urethral discharge, which it has a tendency to do.

Dover's powder or Pil. Sap. c. Opio, at bed-time, relieves pain.

Among the local measures found most useful are,—the application of douches of cold or tepid water to the affected parts, afterwards rubbing them dry, applying a strong solution of Iodine, and wrapping them in cotton-wool or flannel.

There is no necessity to affect the patient's system by the internal use of mercury, but the writer often uses it locally as a counter-irritant in the form of mercurial ointment, with ol. crotonis.

When the disease becomes chronic, and thickening and stiffness only remain, if cold douches and frictions produce no change, the next course is to compress the joint by means of strips of adhesive plaster, a sufficient number of layers being applied to maintain equable and firm pressure.—*Archives of Medicine*, No. 13, 1863.

ART. XX.—On Ophthalmia.

By JEFFERY A. MARSTON, M.D.,

Assist. Surg. R.A.

Appended to this paper is the following series of sanitary suggestions:—

Practical Recommendations to be put in force in a Regiment afflicted with Ophthalmia.

1. That all men of an affected regiment be inspected by a medical officer at least once daily, with the view of removing at any rate all cases affording any discharge from the eyes.*
2. To make the men, as far as practicable, wash at a pump, having placed a sentry upon the spot, with orders to see that every man brings his towel with him.
3. To place a sentry upon the lavatory to see that every man brings and removes his own towel, fills a basin with water from the tap, empties the same after washing, and refills the basin for his successor, who shall empty the water so left and refill the basin before using it.
4. To institute (if season permit) frequent bathing parades—four times weekly. It is better to make the men bathe in the evening in warm climates, both because it sends them to bed perfectly clean and refreshed after the duties of the day, and, by encroaching upon their spare time, prevents its being spent in public-houses, etc.
5. To avoid, as far as possible, the exposure of the men to the direct rays of the sun, dusty localities for parades, and the massing men together on parade.
6. Frequent exercise in the air in small parties of four to six men, whether affected or not with the disease,—provided that direct sunshine and easterly winds be avoided.
7. To have separate wards for ophthalmic cases, and it is recommended that the worst (purulent) cases be separated from the less acute and less advanced forms of the disorder.
8. Convalescent wards in hospitals, and convalescent rooms in the barracks, for men who have been treated, so that every affected cas

* If a man affected with ophthalmia joins a regiment, it is better to billet him upon a company in which ophthalmia has been present than upon a company free from granular disease.

can be made to pass through a period of probation and observation before joining his regiment in the ordinary way. By this means the danger of contagion from relapsing cases will be avoided.

9. If the men of one room be affected, it is obviously well to clear out that room for a time, and to whitewash it.

10. To see that all bedding, etc., be daily exposed for some hours to the sun and air, and the barrack-rooms thoroughly ventilated. To ensure this being done efficiently, day-rooms for the men are essential.

11. To increase as much as possible the cubic space for the inmates of the barracks.

12. The strictest attention to the latrines, urinals, etc.; closing those which are placed too near the barrack-rooms; directing that the tubs be placed outside the rooms during the night, and filled with water and some disinfectant during the day.

13. To discover, correct, and remove any such exciting causes as may be prevalent—*e. g.* draughts in the rooms, dust in the barrack yards, and by selecting a cool part of the day and the shade for all necessary parades.

14. Cautioning men against the indiscriminate use of pocket handkerchiefs, etc.

15. The use of tow, cotton-wool, or lint in hospital; the destruction of the same after use, with a strict prohibition against all sponges.

16. If the barracks be badly constructed, low in site, or otherwise defective, obviously a change is necessary, and encamping is far preferable, during even hot weather, to inhabiting such buildings. Splitting up the regiment into small bodies is to be strongly recommended also.

17. It is recommended, when one eye only is affected and affording discharge, that it be kept closed by means of cotton-wool, to prevent the discharge coming into contact with the sound organ, which is apt to occur during the night from the patient's fingers. The only objection to this plan is, that it tends to heat the eye and confine the discharge; this can only be guarded against by frequent inspection and syringing.

18. To ensure a prompt and efficient execution of any sanitary measures, it is necessary to obtain from the commanding officer one or more steady and vigilant non-commissioned officers, with some soldiers to act as sanitary police. Great care should be exercised also in obtaining trustworthy, cleanly, and attentive nurses for the sick, particularly in the purulent ophthalmic wards.—*Archives of Medicine*, No. 12.

ART. XXI.—*Extensive Abscesses in both Kidneys.*

By DR. W. RUTHERFORD,
Deputy Inspector-General.

This is an interesting case, simulating abscess in the liver. The condition of the kidneys was as follows:—

Right Kidney.—Was found in some measure buried in a mass of adhesions posteriorly, mixed up with purulent matter. The cortical structure of the organ contained a number of small abscesses, one of which, larger than the others, and about the section of a hen's-egg, communicated with the collection of matter in the surrounding cellular membrane. The kidney was nearly twice its natural size, vascular and friable; the corticle and tubular portions being scarcely distinguishable from each other. None of the abscesses communicated with the calices or pelvis of the organ. On endeavouring to trace the course of the matter, it was found that the largest of the abscesses of the kidney communicated directly with another external to the organ; from thence, along the crura of the diaphragm, posterior to the liver, it found its way into the right pleura, and ultimately into the bronchial tubes; and externally as already described.

The perforation in the diaphragm occurred in the muscular portion, about the centre of its right lateral half, was oval in shape, and about an inch long, antero-posteriorly.

Left Kidney.—Somewhat larger than natural. Several very small circumscribed abscesses, about the size of peas, were found in the cortical structure. The tubular arrangement was distinct, although the mucous lining of the calices, etc., was vascular. No calculi were found in any of the urinary organs.—*Army Med. Report*, 1861.

ART. XXII.—*Observations on the Influence of Pandemic Causes in the Production of Fevers.*

By ROBERT LAWSON, Esq.,

Deputy Inspector-General of Hospitals.

“The expressions epidemic, epidemic cause, epidemic influence, epidemic constitution, pandemic cause, or pandemic influence, occur so frequently in medical writings and discussions, as to show the general belief in the profession that the ordinary climatorial, endemic, and personal causes are insufficient to account for the variations in the prevalence and fatality of disease; yet, wonderfully little is known as to the nature of the cause in question, its mode of operation, the complaints it induces, or the extent to which its influence is experienced,—all of them points on which more extended information is required before the present ideas on the ordinary causes can be rendered more precise.

“The advance of knowledge on this subject has been much impeded by the disposition, so strong among medical writers and observers, to regard disease as they individually see it, and to refer its prevalence and character to circumstances affecting, obviously, the population within their immediate sphere; while, had their investigations been extended to other countries, a similar prevalence of disease might have been found, under local circumstances, very dif-

ferent from those thought so essential to its occurrence among themselves; thereby indicating the operation of some cause more extensively than they had reckoned.

"It is proposed to elucidate this important subject, in connection with fever, mainly with the assistance of the statistical returns of the sickness and mortality in the Army, from 1817 to 1836. These afford a continuous record of the progress of disease in bodies of men, small it is true, but pretty constant in number, and under nearly similar circumstances at each place. The stations extend from Ceylon to Jamaica in longitude, and from Great Britain to the Cape of Good Hope in latitude; they present a great variety of climate, and the greatest difference as to the ordinary endemic sources of disease, yet fevers prevail amongst them, presenting periods of increase and decline with much regularity, and which can often be distinguished at them all."

The above are the introductory remarks to this elaborate essay, which scarcely admits of condensation.

The following passage, however, strikes us as very suggestive, and, as respects cholera, we can, from personal experience, support the views of the author, for nothing is more common in India, during the prevalence of cholera in the plains, than to observe cases imported into the Himalayan stations without the disease spreading there, although the patients are treated in the ordinary wards of the hospitals:—

"It may be well to notice another point in connection with epidemic disease on which there appears considerable misconception, and a want of that conclusive evidence which alone can set it at rest. I allude to the supposed extension of diseases, such as yellow fever or cholera, by personal communication. It is clear that, to settle this question, the experiment should be tried, whether personal communication can propagate the malady, independently of the local causes which many consider give rise to it; but the difficulty is to ensure that this has actually been done in any given case. At Newcastle (Jamaica), in 1856, cases of yellow fever, attributable to the low ground, were put into the hospital among the ordinary sick, and, after awhile, some of the patients and attendants, who had not been away from Newcastle for months, became affected with the same disease. Now, this evidence proves only that the causes of the disease were sufficiently active at the hospital to induce it. It suggests, it is true, the possibility that the fever might have been propagated by personal communication, and, had the evidence stopped there, no doubt this view would have been strenuously maintained. After the sickness of the hospital became manifest, however, it was cleared, and the inmates removed to one of those healthy zones already mentioned, about 400 feet distant. Here the other patients and attendants ceased to be attacked, though the opportunities for their being so, so far as personal causes were concerned, were, if anything, greater than in the proper hospital building. Under the last-mentioned circumstances, the local causes were removed, the personal remained, and yet the disease no longer affected those subjected to the latter. The only conclusion admis-

sible is, that local causes, and not personal, caused the disease in the locality originally occupied by the sick. There is a great mass of evidence regarding yellow fever, from numerous independent sources, to the same effect.

"Cases arise every now and then, however, which those who entertain the opinion that the disease is communicated from person to person adduce as establishing their position. Every one of those I have examined appears unsatisfactory, inasmuch as the observations were made under circumstances favourable to the operation of a local as well as a personal cause, and they were not varied so as to eliminate the former; or, if repeated, it was again in such a position as to introduce the local element. Observations of this sort may give an apparent support to those preceding them, made under a similar combination of circumstances, but, though repeated to any extent, can never settle the point in dispute. Had the sick at Newcastle been removed to one of the sickly divisions of the cantonment, on the hospital being closed (and it was not known at that time what parts would prove sickly), it is clear that the apparent extension of the disease under circumstances favourable to personal communication would have received a strong support, instead of being contradicted by the result actually obtained."

The author's explanation of the term "pandemic" is as follows:—

"The facts detailed above, showing the regularity and progression of the oscillations of febrile disease at so many points on the earth's surface, far removed from each other, and embracing the continued, remittent, and yellow forms of the disease, leave no doubt as to the operation of some cause equally extensively. There seems to be a series of waves, generated in southern latitudes, which flow to the north or north-westward in succession, leading to an increase of fever at every point over which they pass; and, in some instances, these are so close, that Canada is under the influence of one, the West Indies of the following one, and a third is apparent at the Cape. The atmospheric vicissitudes, or local influences, to which epidemics are so often referred, confined as they are to limited tracts, are quite insufficient to account for such widely-spread effects, though, when the general cause is operating, these local causes are found most influential in generating disease within their sphere of action. A cause, extending over continents and seas as this does, is more correctly designated 'pandemic' than 'epidemic,' and as the latter term has come to be applied to every local outbreak, and very often without any attempt to distinguish between an epidemic and a mere increase in the ordinary endemic diseases of the place, it would be well were 'pandemic' to come into use, to indicate that more general influence to which all the others are subordinate. In what follows, the expression 'pandemic wave' will be employed in the sense here indicated."

In a subsequent paragraph, he says:—"As it appears from the details given above, that in different countries different forms of fever prevailed, under the same general influence, it must be admitted that the pandemic cause determines the frequency and severity, rather than the particular form of the fever, which, there are

many reasons to conclude, is more intimately connected with the local circumstances at the time. As bearing on the possibility of yellow fever originating at Ascension, it may be mentioned that at St. Helena a case was returned as this disease in 1819, another in 1820, and a third in 1821; there are no details of these, it is true, but the medical officers who reported them must have had a strong impression as to their nature, or they would not have given the name of a disease which was not supposed to exist in that island. These cases presented themselves, and were recorded before the 'Bann's' arrival at Ascension; there is no question as to importation, and as they are in accordance with what has been observed frequently elsewhere, of sporadic cases of yellow fever appearing under favourable circumstances, the evidence they afford seems trustworthy.

"A distinction as to causation is frequently attempted to be drawn between sporadic cases and those which occur in greater numbers, but without good ground for the opinion. If one case of yellow fever arise in a given situation, it must be admitted that there was a sufficient cause for the disease; the cause may have been slight, and the subject particularly susceptible, still, the nature of the cause must have been such, that if more intense, and more extensively applied, a greater number would have been attacked. It is characteristic of a pandemic wave, that, during its passage, local causes, which under ordinary circumstances seem to exercise inconsiderable influence over the health of those exposed to them, then display a potency, which, if regarded without due weight being given to the reigning pandemic influence, seems quite unaccountable."

And again he adds:—"Thus, between 1823 and 1829, as in the previous period, there was a series of pandemic waves, first apparent at the Cape, from which they passed on to the northward in succession with remarkable regularity. A few notices of remarkable outbreaks of febrile disease in other places are subjoined, and it will be seen that they all coincided with the passage, at each, of some of the waves already described."

The concluding portion of Mr. Lawson's paper is as follows:—"The facts detailed establish conclusively the occurrence, between 1817 and 1836, of a series of oscillations of febrile disease, following each other with amazing regularity. These have been attributed to a cause or influence which, from its extent and progressive character, has been designated a 'pandemic wave,' the term epidemic referring rather to a single form of disease affecting a limited space.

"What the nature of this pandemic wave and its mode of action may be, it is difficult to say; but certain deductions may be made with advantage from the facts concerning it set forth above. Of these, the most striking is the constant course in the Atlantic and western part of the Indian Ocean, from south or south-east to north or north-west. This can take place in virtue of some law of nature only, and the situation of the magnetic poles immediately suggests itself as being in some way connected with it; but of this there is not at present any proof, so far as I am aware.

"Another point of more immediate importance, as bearing on some of the medical opinions of the day, has been alluded to several times in the course of this paper, viz. the occurrence of every form of fever under the operation of the same pandemic wave, yellow fever, remittent, intermittent, and continued fever, and plague having prevailed in the localities in which they were endemic, as the wave passed over them. Sometimes, it is true, one of these forms invaded the territory of another for awhile, and such intrusions have given rise to some of the most embittered controversies in the history of medicine. The principles here developed will place the evidence in connection with these unusual irruptions of disease in a new light, and contribute to reconcile the opposite opinions regarding them, giving us a basis to reason on epidemics better suited to the time, and the advance of our knowledge of the causes of disease, than that on which the subject was contested by Pym and Bancroft fifty years ago.

"Though, as a general rule, the peculiar form of fever developed is that usual to the locality, still there are exceptions, and of sufficient importance to require more particular notice. Thus, yellow fever is only an occasional visitant at Sierra Leone, and on the coast of Africa, Gibraltar, Bermuda, New Orleans, etc. Plague, though commonly confined to Barbary, Egypt, Syria, and Turkey in Europe, has shown itself elsewhere, as at Malta in 1813, in the Ionian Islands in 1815-16, at Noja, in Naples, in 1817. A type of fever which first attracted attention at Rangoon and Calcutta in 1824, was seen in the West Indies and America in 1827-28. These casual irruptions of the new form of the disease have always taken place during the passage of a pandemic wave, and other places under the influence of the same wave manifested other forms of febrile affections. There are many instances of this; for example, in 1828, fever, chiefly yellow, produced a mortality at Gibraltar of 121.1 per 1000 of strength; at Santa Maura, the same year, the mortality from fever, chiefly remittent, was 149.7 per 1000; petechial typhus prevailed at Naples, and plague in Albania and the Moors, and over Turkey, Syria, and Egypt. If particular instances be taken, two fevers may be found in close contiguity; thus, plague appeared in Corfu at the end of 1815, in a marshy district, in which remittent had prevailed just before, and was thought to have been limited by quarantine, until it ceased in May, 1816; that year it broke out in the village of Comitato, in a mountainous situation in Cephalonia, in the beginning of June; no means were taken to limit it before the end of the month, but nevertheless it did not attack any one out of the village, where it ultimately disappeared in the middle of July.* The garrison of Cephalonia in 1816, according to Hennen, consisted of 396† men, and the deaths from fever were 78, or 197 per 1000 of strength; the inhabitants also suffered more from fever

* 'Statistical Report on the Mediterranean,' p. 39.

† 'Topography of the Mediterranean,' pp. 298, 302. At page 283 the strength is stated in the text to have been "three hundred and seven," which would have made the mortality 254 per 1000.

that year than usual. Such facts lead to the conclusion that the pandemic cause can determine, to a certain extent, the resulting form of fever, though local and temporary circumstances may often be more powerful in this respect, and may even determine a different form, or suspend its operation altogether for the time, instances of which may now be given.

"At Sierra Leone the prevalent fever was remittent, unless in 1823, 1829-30, 1837-38, and 1847. In these years yellow fever prevailed, but not exclusively. In the first three it broke out after some showers had fallen, but before the periodical rains fairly commenced; and on these setting in heavily, the form changed to remittent. In 1823 there was a break in the rains, in the middle of July, when cases of yellow fever appeared again, but, on their recurrence, remittents only showed themselves. In 1837, on the decline of the rains, cases of the yellow fever again appeared. In 1847 the disease was later in showing itself; the rains had commenced as usual, and 12.44 inches fell between the 4th and 24th June, and the early cases of fever were common remittents. From the 25th June to the 4th August, there were only 9.58 inches of rain, as against 31.33, the corresponding period in 1848. The first case of the yellow form occurred on the 29th June, and the disease prevailed during this period. The wet season was rather irregular in 1847, and dropping cases occurred at intervals afterwards, but chiefly during the periods of comparative absence of rain; the majority of the attacks, however, were those from remittent. On the cessation of the rains, some other cases of yellow fever presented themselves.* These alternations of remittent and yellow fever, as the rain was more copious or scanty, show a connection between the meteorological conditions and the form of the disease too obvious to be overlooked. In fact, in Sierra Leone, as elsewhere, yellow fever is a disease of fine weather. A certain amount of rain, or moisture under the surface, must have preceded its outbreak; but much of either checks it, until the return of more settled weather, with a brighter sky and stiller atmosphere. A striking instance of the power of heavy rain to suspend yellow fever was afforded at Newcastle, in Jamaica, in 1856, when the disease nearly disappeared for three weeks in November, during wet weather, but commenced again as it became settled and fine. The effect of rain, followed by a warm, still state of the atmosphere, in inducing fever, is described in a very interesting and circumstantial manner in Mr. Ralph's 'Memoranda on the Yellow Fever in the Second Regiment at Barbadoes, in 1816,' and is well worthy of perusal.†

"It is an interesting subject of inquiry whether the pandemic cause

* These facts are mostly from the official reports of Barry, Scheltz, and Fergusson, to which I had access at Sierra Leone. The information for 1847 was the result of my own observation on the spot.

† In Bancroft's 'Sequel to an Essay on Yellow Fever,' p. 443. This work cannot be too strongly recommended to the attention of the junior medical officers in the Army, as containing much interesting and useful information.

acts on the system, rendering that more susceptible of the influence of the ordinary causes of disease, or on these themselves, giving origin to a more concentrated, or a different kind of poison, which generates a more virulent, or a new form of disease; or whether it affect both, increasing the activity, or altering the kind of the causes, and enhancing the liability of the body to be affected by them. Our information on these points is still very limited and unsatisfactory. I have observed that prior to, and during the prevalence of, an epidemic of yellow fever, the urine contained an unusual quantity of urrhodine, giving a deep reddish-brown when treated with nitric acid and set aside for some hours.* Something similar has been observed with regard to cholera. These tend to show that the body itself is affected by the pandemic cause; but the observations require to be repeated, before much weight can be attached to them.

"The outbreaks of epidemic disease have been referred immediately by some to the rapid generation and diffusion of myriads of microscopic animals, and by others to a similar production of vegetable organisms. The evidence in support of either is very defective. It may be well to keep the possibility of such things occurring in view, while we cannot be too cautious in admitting their efficiency, without adequate and irrefragable proof.

"In the above remarks, the influence of the pandemic wave in producing fever only has been examined, but it is obvious in many other affections, of which cholera, diarrhoea, dysentery, and scurvy are perhaps the most important. Even consumption and ulcers vary so much from time to time in frequency, as to suggest that they are similarly affected."—*Army Med. Report.*

ART. XXIII.—*Small-Pox : its present Prevalence, Prevention, and Treatment to mitigate and prevent Pitting.*

By P. MARTYN, Esq.,
Surgeon R.N.

"One who would know what small-pox is must read old books, or visit countries where vaccination is not practised; and this opportunity has been mine. I have seen and treated all fevers,—plague, yellow fever, typhus, and intermittent, as well as Asiatic cholera; these have their spheres and their periods, but small-pox meets no such limits, and in sufferings and deadliness passes them all. Its history is more curious than that of any other disease, but it is a thing of the past for this country. This immunity from one of the greatest evils is due to vaccination, and it is a wonder that so simple and sure a preventive should be neglected. But the disease is not extinguished. The alarm that prevails at its late increase will have the salutary effect of causing the law rendering vaccination compul-

* Brit. and For. Med. Chir. Rev., p. 475.

sory to be no longer a dead letter. Of the various officials of the metropolitan and local boards of health and of parishes it must be made the duty of some to see and to report that the obligations of that law are carried out; that vaccination has not only been performed, but that it has succeeded, and, if doubtful, be immediately repeated. That vaccination has not lost its effect by age and long succession, the smooth faces and whole sight of populations attest. Should the matter require renewal, as a few think, Mr. Ceely, of Aylesbury, to whom the profession is indebted for investigations and experiments the most satisfactory and conclusive, made many years ago, would, I am sure, be happy to procure it. Every one seen in public, who may, unfortunately, have a red face or an eruption, innocently adds to the alarm. Those who have fears or doubts, or who may be exposed to infection, ought to be re-vaccinated. Vaccination so repeated, with all care, may not take, or only imperfectly, running its course in a shorter period. Small-pox itself does occur a second time, but very rarely.

Sydenham, who had the greatest experience in this epidemic as it formerly fell on London, records that the worst occurred in an unusually dry season. "*Confluentes pessimæ; stragem ingentem edunt; siccitate inaudita istius anni acuntur vehementer.*" So the continued dryness of this season causes the increase of the disease at this time. Dryness—a great promoter of health—here, where a crowded population lives over sewers and its own excreta, becomes a source of disease. Water is now abundant and freely distributed, and should be made to do what rain has not effected.

For the mitigation of the disease and the prevention of pitting I have long practised, and found most successful, the following simple treatment. The rigour which is most marked may be suspected to be the access of this disease, if there exist no local malady to which to attribute it. When this rigour occurs, the patient ought to go to bed and be covered with warm but light clothing; the hands and face ought to be carefully covered, leaving breathing-room only to the mouth and nostrils: he ought to get frequent and abundant warm diluents—whey is the best, being akin to the blood, is easily assimilated, and sustains the system against the impending prostration. Nitrate of potass is most effective as a vascular sedative, diaphoretic and depurative, and I combine with it *ipécacuanha*, aromatic spirits of ammonia, and sometimes squills, thereby improving its efficacy and directing its action to the skin and the kidneys. This treatment, with one full action of an aperient, produces diaphoresis of the body and of the hands and face (which must not be checked by allowing the patient to get from under the clothes for any purpose whatever), and reduces the primary fever, always so severe; the increased natural discharge from the skin leaving less for the morbid action to do, the eruption will be less. There are two reasons why the eruption is greatest on the hands and on the face—because these parts are more highly organized, and because they are left uncovered, the rest of the body being covered. The hands, then, must be kept under the bed-clothes, and the face covered with cotton-wool, merino, silk, or some warm light mask, leaving only breathing room. This

will cause these parts to perspire like the rest of the body, save the eyes, render the vesicles fewer and smaller and rarely confluent, attended with less inflammation and inflamed areolæ; it will prevent long suffering, mitigate secondary fever, and prevent the red marks or areolæ which disfigure the face for months after recovery. The vesicles or pustules are to be transfixed with a needle, and the matter allowed to escape. The pressure of this lymph, the lower stratum of which is solid, on the fine unprotected papillæ of the cutis, causes the absorption or ulceration, and so makes the pits or marks. This will prevent the pitting. Animal broths should be given for diet.

There are many remedies recommended, general and local. I give what I have proved to be successful in this and other climates.—*Lancet*, May 9, 1863.

ART. XXIV.—*Extracts from Annual Report, and Return of Sick treated in the Lunatic Asylum, Fort Pitt, from 1st January to 31st December, 1861.*

By STAFF-SURGEON LUKE BARRON, M.D.

On the subject of treatment, Dr. Barron says:—

“With regard to the remedies employed, and found to be most successful in curing patients of their dirty habits, such as wetting their beds, etc., it may be useful to point out a few of the most common of these measures. Frequent visits are made to such patients during the night, when they are awakened, and taken to the water-closet by an attendant. This step is usually effectual with men of congenital weakness of intellect; but in some cases it is necessary also to wash them in cold water in a sitz bath, and this course (harmless as it is) rarely fails to check these dirty practices.

“With respect to the treatment pursued in this establishment, little need be said, as the general rules which have guided the practice of former years, have, with very little variation, been continued during the past twelve months. It is unnecessary almost to say that if a patient is labouring under physical disease of any kind, this becomes the first object, and every means likely to restore him to health, or to mitigate his ailments, are adopted. For his mental affection, the main remedies depended upon are of a moral character,—the avoidance of all irritation, where possible; soothing, amusing recreation, and such occupation and employment as the hospital affords, are some amongst the measures had recourse to. Whenever insane patients can be induced to work with any degree of interest in the labour in which they are employed, they almost invariably show an improvement in their mental condition. These measures, the liberal use of warm baths, douches to the head, and a full scale of diet, may be said to comprise our principal means of treatment.

“No mechanical appliances of restraint are ever used in this establishment, and seclusion is often the only means we have of calming maniacal excitement in cases of insanity.”

Dr. Barron having been struck by the number of cases in this hospital in which an unsymmetrical configuration of the cranium existed, kept a return of all such cases during 1861. They amounted to 20 per cent. of the whole admissions, and in many cases where an absence of symmetry of the head existed, a corresponding distortion of the face was also present. These malformations appear to be much more common in the grade from which soldiers are drawn than in a higher circle, and Dr. Barron thinks it possible that they may be the result of injuries received during pregnancy, either from violence or hard work, or of rough treatment in the stage of parturition.—*Army Med. Report*, 1861.

ART. XXV.—*A View of the Present State of our Knowledge of the Question of Muscular Irritability.*

By H. N. MACLAURIN, M.D.,

Royal Navy.

"Till within the last few years," says Dr. MacLaurin, "the great majority of physiologists believed that the doctrine of the irritability of muscle had been finally established. . . . The extraordinary advances which have recently been made in physiological science, particularly in what may be called the *physical* part of nervous physiology, have induced several observers, especially on the Continent, to re-open the question; and the result has undoubtedly been, if not altogether to overturn the Hallerian doctrine, at all events to show that its foundations are by no means so secure as the authors I have already mentioned (Alison, Carpenter, Kirkes, Todd and Bowman, and Bennet) would have us believe. Among the Continental writers the principal defenders of the theory of muscular irritability are Bernard, Kölliker, and, though on different grounds, Kühne; on the other hand, it is attacked with great ability by Schelske, Wundt, Eckhard, and Funke. Of their observations and arguments Dr. MacLaurin proceeds to give some account, pretending, he adds, to nothing beyond the humble office of a reporter of other men's views. We must refer all who take an interest in the subject to the original paper, from the concluding portion of which we extract the following passage:—

"We thus find that the chemical argument, like the others which we previously considered, fails to decide the question in a satisfactory manner. Our conclusion, from a survey of the whole controversy, must undoubtedly be, that while certain circumstances seem to preponderate in favour of the independence of muscle, other methods of proof tell strongly against it. The matter is one, therefore, on which our judgments must for the present be suspended, and which can only be settled by further careful investigation of facts."
—*Edin. Med. Journal*, July, 1863.

ART. XXVI.—*Remarks on Two Cases of Kelis. (With Photographs and Coloured Drawings.)*

By DEPUTY INSPECTOR-GENERAL T. LONGMORE.

The writer referred to the paper by the late Dr. Addison, in the thirty-seventh volume of the Society's Transactions, on the Keloid of Alibert, and on that form of Kelis which he (Dr. Addison) considered to be of a distinct character, and which he designated True Keloid. The two cases now brought to the notice of the Society were very striking illustrations of these two forms of keloid disease; but the writer was led to question whether evidence was not afforded by them that they were only simple varieties of one and the same affection, dependent upon the same keloid constitution of the dermal tissue, and owing their different features solely to the differences in the exciting causes.

In the first case the disease was developed after punishment by flogging, of a comparatively light nature. There was scarcely any laceration of the skin. About three months after the date of punishment, the soldier noticed a growth upon the spot where the flogging had been chiefly received. This growth gradually increased from a small round tubercle to a large flat mass, nearly as large as a man's hand. It was not accompanied with pain, but there was irritability, itching, and tenderness, when the part was subjected to the pressure of the cross-belt and weight of the knapsack. On the front of the patient's chest were several small tumours, evidently of the same nature, but the date of the first appearance of those growths could not be ascertained.

The disease in the second case was more extensive than had been described by any writer hitherto, and presented a most remarkable appearance. It was of the kind which Dr. Addison considered should be separated from the former variety under the name of "true keloid." The patient, a cavalry soldier of strong powerful frame, went to India with his regiment in November, 1857. Five months afterwards, at the commencement of the hot season, he began to suffer from lichen tropicus, in common with all the other men of the regiment. About a month afterwards the keloid disease began to show itself, in the form of a few prominent red tubercles on the right forearm. It next appeared over the middle of the sternum, and thence extended gradually towards the two sides of the body. At the same time it appeared on the left shoulder and various parts of the back, and continued to spread until it had covered the entire dorsal surface of the body. The skin of the face was also affected.

The physical characters and accompanying symptoms of the disease in both instances were fully described in the historical accounts of the cases presented to the Society. Their characteristic features were represented in the drawings and photographs.

The writer urged that no two more striking examples of the two species, "true keloid" and "spurious keloid," according to those who designate them as distinct species, could be met with than the cases brought to the notice of the Society. He argued, however,

that, in the case in which the kelis was excited by flogging, the comparative slowness of the punishment, the rarity of such a consequence, but more particularly the presence of the keloid spots in their favourite habitat—the skin covering the anterior part of the chest—established the constitutional nature of the disease, just as fully as it was established in the second case, where it appeared to follow the excitement of the prickly heat. The fact, too, that the general characters of the diseased growths in both instances were alike, and that in each instance the hypertrophy was greatest where the pressure of the cross-belt was chiefly exerted, confirmed still further the identity of their nature. The deduction was hence drawn, that, both the patients being of a keloid diathesis, the difference in the mode of distribution, and in some of the features, of the diseased growths in the two cases could be accounted for by the different natures of the exciting causes.

No treatment had appeared to exert permanent beneficial change in either case. The fact that the pressure of the cross-belt acted in each instance as a stimulus to increased growth was held to be a sufficient argument against treatment by continued pressure, which had been recommended by some surgeons. The evidence of the constitutional origin in the case where the chief tumour was isolated upon the left shoulder, as well as the nature of the immediately exciting cause, had counter-indicated any attempt at cure by extirpation.—*Proc. Royal Med. Chir. Soc., Feb. 1863.*

ART. XXVII.—*Scurvy : Its Cause.*

By W. S. OLIVER, M.D.,

Assistant-Surgeon, 4th Battalion, 60th Rifles.

Dr. Oliver's object in this brief paper is to point out that the true cause of scurvy entirely depends on a deficiency of protein compounds, both animal and vegetable, in the food used by sufferers from that disease.

"The scorbutic properties of salt meat," says Dr. Oliver, "are, I think, undeniable, and the received theory as to its action is, I believe, the solvent power its alkalinity possesses on the albuminous components of the human tissues. This theory has been found to be incorrect, and seems to support my statement in a wonderful degree. The salting of meat does not produce scurvy directly by the introduction of saline particles into the system, but indirectly by dissolving out and removing from meat all its protein materials, which remain behind in the brine; and if the men on board ship, instead of soaking the meat in fresh, and when that is not procurable, in sea water, in order to get rid of the salt, could be induced to consume the brine in their soup, puddings, etc., they would, in my opinion, be making use of the best antiscorbutic that is at the Surgeon's disposal. Owing to this theoretical error as to hyper-alkalinity of the

blood, pickles, lime-juice, etc., are administered with a view to its neutralization. I have seen them issued daily for four months as a prophylactic measure, and they proved as useless in that respect as they did in the cure of the disease after it had made its appearance. And what was this owing to? Not to a deficiency of acidity, for that they possessed, but to the absence of their protein elements, which in their fresh state they contained in abundance, but in this state had undergone that *eremacausis* to which protein compounds, both animal and vegetable, are so prone. The process, also, to which vegetables are subjected to in pickling at large pickle manufactories, in my opinion, renders them totally useless as antiscorbutics. In order that a large stock may be ready for use, they are enveloped in brine, and its action on them, and the results, are similar to those on meat."

It is stated that the backwoodsman of Canada, who has to work hard and subsist on boiled potatoes, biscuit, and salt meat, often suffers from scurvy, for the cure of which he finds an infallible remedy in eating the potato raw instead of boiled.—*Lancet*, Jan. 17, 1863.

ART. XXVIII.—*Lemon-Juice ; its Preservation.*

"The lemon-juice with which we were supplied was of the most excellent quality, and consisted of two kinds; one of which was prepared by adding a tenth part of brandy, and the other was the acid simply boiled, and containing no spirit. The juice was kept in bottles, each containing 64 oz., with a stratum of olive-oil, about half an inch in thickness, on its surface, and the bottles were carefully corked and sealed."

Each man daily drank his allowance of 1 oz. from the tub, in presence of an officer, and to this circumstance Dr. Armstrong attributes not only the immunity which the crew of the 'Investigator' enjoyed from scurvy for a longer time than had ever been known before in the Polar Sea, but also their good fortune in preserving an unprecedentedly high standard of health during the same period. The navy allowance of lime-juice is half an ounce daily, with the same quantity of sugar, after the men have been fourteen days on salt provisions; but in polar service double the allowance is daily given.

"The opinion entertained by many, that lemon-juice becomes deteriorated by keeping, is quite fallacious, as it will retain its virtues unimpaired for any length of time, provided that due care be observed in the mode of preserving it. The lemon-juice on board the 'Investigator' was subject to every possible vicissitude of temperature, from the highest degree of equatorial heat to the lowest of polar cold, being under the influence of the latter for upwards of three years; and when I examined it, at the end of this period, I found it as good and as pure as on the day we left England, and its power of neutralizing alkalies was not in the slightest degree impaired."

Dr. Armstrong is disposed to give a preference to the juice which is prepared with spirit, as it remained clear and free from deposit, while that which was simply boiled deposited a portion of its mucilaginous constituents, yet its therapeutic efficacy seemed not to be in the least impaired.

The quality of the lemon-juice which is used in the Mercantile Marine is often very inferior, being adulterated with acids, and taken on board merely to comply with the law, but not to be used as the law directs. To this neglect, and the issuing of cheap and unsound provisions to the crews, is attributed the more frequent appearance of scurvy during recent years.—*Dr. Armstrong, R.N., on Naval Hygiene and Scurvy*, pp. 17, 93.

ART. XXIX.—*The Growth of the Recruit.*

In the following extract from Dr. Aitken's scientific and practical *brochure*, special attention is called to the progress of ossification of the bones, and the necessity that exists for the recruit being gradually trained to his duties by a judicious course of exercises, so as not to overtask his strength at too early a period :—

“As the twig is bent, so the branch will grow. I have shown you that till the twentieth year of life the ribs behind are all unfinished, soft at their joint-ends, where resistance and motion occur, and where they are still growing. The breastbone in front is in a similar condition. It is obvious, therefore, that continued pressure upon these parts from before and from behind must exercise a material influence in fixing the future form of the chest. The cartilages of the ribs in front and the breastbone ought to have full freedom to rise upwards and advance forwards at every inspiration, for thus the diameter of the chest, from before and behind, is naturally increased at every act of breathing. Any pressure on the chest, therefore, exerted between the front aspect and the back, when the bones are still growing, must tend to *set* the further growth of the bones in an unnatural direction ; for, in order to maintain the vital capacity of the lungs, the capacity of the chest cavity from side to side must come to be increased, at the expense of the capacity in the other and normal directions. The capacity of the lungs goes on increasing with age, and height and growth, so that men from 5 feet to 6 feet high inspire from 174 to 262 cubic inches in a progressively ascending scale. The growth of the heart also goes on relatively to the growth of the body.”

“Now, what is the fact? When the recruit joins, and has ‘passed the doctor,’ he is handed over to the drill-serjeant ; in a few months a pack is put upon his back, and he goes through precisely the same work as the matured and hardened soldier ; if he has a strong constitution, and does not live too intemperately, he weathers the storm, and in the end becomes a soldier ; but if he has a taint of delicacy, if scrofula be lurking in his system, it is sure to be deve-

loped. Drink, night exposure, drill with a heavy load, bad ventilation, perhaps venereal and a course of mercury, settle the question, and he dies or is discharged, a burden to himself, to his friends, and the country, before he has reached the second year of his service."—*On the Growth of the Recruit, etc. By William Aitken, M.D., Prof. Army Med. School.*

ART. XXX.—Report on "Carniset," a Concentrated Food, prepared by Messrs. Gehrig and Grünzig, of Berlin.

By the PROFESSORS OF THE ARMY MEDICAL SCHOOL.

By order of the Under-Secretary of State for War, the Purveyor-in-chief forwarded to Chatham, for trial, 10 lbs. of a concentrated food, to which the inventors, Messrs. Gehrig and Grünzig, of Berlin, have given the name of "Carniset."

In a letter accompanying this food, Messrs. Gehrig and Grünzig state that "it contains, in a concentrated form, the exact proportion of all such nutritious and digestive ingredients as are necessary to sustain man in perfect health. Three ounces are sufficient for one meal, containing the strength of about 1 lb. of beef. It is boiled for fifteen minutes in a pint to a quart of water, and, in order to give it more substance, one adds some biscuit or bread."

It is also stated that for convenience the food had been made into the "lentil form," and that it consisted of two kinds,—*"bouillon,"* intended for dinner, and *"cocoa,"* which is equally substantial," intended for breakfast.

The carniset was subjected to a most careful chemical, microscopical, and practical examination. From the chemical examination it was considered that this food is strongest, so to speak, in its nitrogenous constituents, and that if it be ever used, it can be only as a makeshift for a short time, and then in much larger quantities than those stated by its inventors.

The following is the concluding summary of the Report:—

1. "That the carniset is easily cooked and is easily digested, and does not cause diarrhœa.

2. "That its flavour, especially of the *"bouillon,"* is disagreeable to most persons, and in some cases produces even nausea and almost inability to take the carniset, and that, as the flavour of food is a very important point, this is a serious objection.

3. "That in a chemical point of view the food cannot be considered a perfect one.

4. "That men can live for some few days in apparent health and vigour on 6 or 8 oz. of carniset and 10 oz. bread.

5. "That there is, however, with this quantity a considerable loss of body-weight during the time, a greatly lessened passage of nitrogen from the system, and in some cases an absolute wasting of nitrogenous tissues, without repair, which could not go on for any long period without inducing weakness and its consequences."—*Army Med. Report.*

ART. XXXI.—*Report on the Ventilation of the New Barracks at Gravesend.*

By T. G. HEWLETT, *Assistant-Surgeon in Her Majesty's Bombay Army*,
ST. JOHN STANLEY, and BAYNES REED, *Staff Assistant-Surgeons.*

We may point to this paper as an excellent example of a scientific report on ventilation.

The following extract, regarding organic impurities suspended in the air, is of much practical moment :—

“To discover whatever organic impurities might be suspended in the barrack-room, we drew 8·088 cubic feet of air through a solution of permanganate of potash of known strength (1 cubic cent. = ·00002 gramme) by means of an aspirator, connected by india-rubber tubing to the bottle containing the solution. The liquid became almost decolorized during the experiment, and a deposit occurred. On placing some of the sediment under the microscope, we found many scales of pavement epithelium, pieces of cotton fibre, shreds of wool, and amorphous bodies in large number.

“We believe that this method of examining the floating impurities of the atmosphere has only recently been introduced; but it appears to us that its importance can hardly be overrated, as by its means the existence in the atmosphere of such foreign bodies as pus-cells, either fresh or dried up, and only wanting certain hygrometric conditions to become active, has been discovered. These would, of course, account for the diffusion of purulent ophthalmia, under circumstances which have hitherto been inexplicable. We need hardly mention the important influence that these microscopical atmospheric impurities may exert in pulmonary affections, and we may fairly hope that future experiments will be undertaken to demonstrate the various poisons of miasmatic origin, and that before very long the specific poisons of cholera, paludal fevers, and other zymotic diseases, will be described.

“In this barrack-room the suspended matters appear to us to be rather numerous; but as no standard of comparison has yet been given, it is difficult to express a decided opinion on this point.

“With regard to organic matter, all we can say is, that in about 8 cubic feet of air, enough existed to nearly destroy ·00002 gramme of permanganate of potash.”—*Army Med. Report.*

ART. XXXII.—*Hygienic Notes.*

Sewers and Deodorization.

Three important works have been published in 1862, viz. Two Reports of the Committee of the House of Commons (Dr. Brady's) appointed to inquire into the question of Sewage; and the Second Report of the Commission, of which Lord Essex is the President, and which is engaged in investigating the subject on a very large scale.

All that is known of the effect of sewage applied to land may be gathered from these books.

5. *Perchloride of Iron*.—When this salt is added to sewage, a precipitate of peroxide of iron is caused by the carbonate of ammonia, which forms so rapidly in sewage, and carries with it all the suspended matters of the sewage. A clear fluid remains above. The sulphuretted hydrogen falls in the precipitate as sulphuret of iron.

Both precipitate and supernatant liquid are free from odour.

This is the "best practicable precipitant" of sewage. It has been tried at Croydon and Coventry. From 14 to 29 grains per gallon of sewage are necessary for London sewage; for Croydon sewage, from 5 to 15 grains were necessary.

The perchlorides of iron can be manufactured by dissolving peroxide of iron in hydrochloric acid,—the different iron ores, refuse oxide of iron from sulphuric acid works, iron rust in foundries, etc. Another plan is to take equivalent proportions of common salt, sulphuric acid, iron rust, and water, so that chlorine, when disengaged, shall combine with the iron. A hard, yellowish material, not very deliquescent substance, containing 26 per cent. of perchloride of iron, is formed, which can be transported to any distance. The price, if made in this way, is £2. 7s. per ton (cost of labour not included).

Campaigns.

The Mexican War.—So little has been allowed to become known of the condition of the French army in Mexico, that no authentic medical history of that curious campaign can at present be given. It is tolerably well known that the losses from vomito, and the sickness from malarious fevers and dysentery, have been considerable. The French appear to have lingered too long in the *tierra caliente*, and did not push on early enough, on account of want of transport, to the first ridge of high lands, which would have secured them from yellow and the severest malarial fevers. The difficulty of communication has therefore been the great cause of their loss, and the probability is, that the period of greatest sickness is now gone by, and that the latter part of the campaign will be more fortunate than the first. Among the early deaths from yellow fever was that of M. Lallemand, one of the Professeurs Agrégés of the Val-de-Grâce, a military surgeon of great excellence, who had acquired a European reputation by his work on Alcohol, and before whom a most brilliant career was opening. He fell a victim to his own energy and devotedness. Some other medical officers have also died.

North America.—In fact, it is very much the old story of all the wars that have ever been waged. The Americans have now learnt the bitter lesson, which is unhappily so familiar to Europeans.

Of the kind of sickness not much can yet be said. Diarrhœa, from bad food and from drinking surface-water, was very common. In August, 1862, in the Peninsula, the malarious fever had quite a "typhoid" character. There was extraordinary inertness and incapability of making the least muscular exertion; there was often

diarrhœa, and in the worst cases a deep bronzed discoloration of the skin (from pigment?). Decided periodicity is not mentioned, but the malarious origin was shown by the disease rapidly yielding to quinine and stimulants.

In Missouri there were some cases of true typhoid fever, with enormous intestinal disease, and running a very rapid and fatal course. At first stimulants were used, but as the cases all died, the plan was changed and cupping was had recourse to, with small doses of turpentine, castor oil, and opium. Alcohol was entirely omitted. "From the time this change in treatment was made, every case (but one of old standing) recovered."

At New Orleans the rule of General Butler was attended with one good result. "Never on the American Continent," we are told, were sanitary measures enforced with such rigour, and the consequence was that there was no outbreak of yellow fever. At Port Royal, where there "were undrained reservoirs of sewage," the yellow fever prevailed, and commenced at those particular points.

In the army of the Mississippi there was much scurvy, ague, and conjunctivitis. There was also much diarrhœa, which was attended with one curious symptom, a great weakness in the knees. As usual in scurvy, there were a number of quite unexpected sudden deaths.

Very little is known of the surgery of the war. At Corinth there was tetanus, which is stated to be "the scourge and dread of the surgeon," so that it must have prevailed to a great extent.

The Air over Marshes.—The air of the Tuscan Maremma has been investigated by Becchi ('Comptes Rendus,' 1861, and Pappenheim's 'Beiträge,' heft iii. p. 78). The marsh near Scarlino, reported to be the most unhealthy of all, was examined. The ground is made up of three layers.

The lowest layer contains little organic substance, and from 3·49 to 5 per cent. of chloride of sodium.

The middle layer contains 30 per cent. of organic matter, and 0·082 per cent. of chloride of sodium. Many of the plants are yet undestroyed, or a part are changed into humin, ulmin, and in humic, ulmic, crenic, and apocrenic acids.

The upper layer contains little organic matter, and only 0·014 per cent. of chloride of sodium: it is clayey.

This constitution of the ground is believed to be similar throughout the whole of the Maremma.

The examination of the air showed the oxygen and nitrogen in normal proportion; the carbonic acid was, however, much increased, particularly at night and during the summer. Ammonia was in variable quantity, but was more abundant in the summer, at which time, also, hydrogen was found in some quantity. The humidity was great; in summer there were often 20 grammes in a cubic metre of air (8·7 grains in one cubic foot). This was particularly marked in the Sirocco, when even healthy men were disagreeably affected. In the summer, also, by means of diluted sulphuric acid, a condensed organic substance was obtained, which, heated with soda-lime, gave traces of ammonia.

The dew examined in June, July, August, September, October, and November was clear, and without smell or taste; occasionally, but seldom, it had a marshy smell: its reaction was neutral. Frequently, after some days, algæ appeared in it. When evaporated, the dew left a dirty yellow residue, which, at a higher temperature, carbonized like a vegetable substance. Nitrate of silver gave a more or less dark red colour. Ozone led through the dew had no effect; chlorine destroyed the organic matter. These last reactions were, however, only marked in the dew of the unhealthy months, August and September; in the winter they were not present.

In August, 1859, $\frac{11}{100}$ of a milligramme (0.00027 gramme) of organic matter were found in a cubic metre (35.316 cubic feet) of air. The organic matter, distilled with sulphuric acid, gave marked indications of formic and acetic acids.

Food.—In last year's Report, the singular febrile disease supposed to be produced by the wanderings of the young trichinæ was mentioned. The last year has seen some remarkable examples of this newly-recognized "trichina disease," which appears to be caused especially by eating pork infested with the *Trichina spiralis*.

A singular outbreak of this affection, affecting twenty-five to thirty persons, has occurred at Planen, in Saxony. In three patients little portions of the muscle from the upper arm were taken, and under the microscope living and very active trichinæ were seen. The symptoms of the disease were depression for many days, followed then by extraordinary pains in the limbs, swelling of the face, and fever. After two or three weeks the symptoms in the slighter cases gradually disappeared; in the severer cases there was general and painful swelling. Only one case in sixteen died; it was dissected by Zenker, and free and encapsuled trichinæ were found in abundance.

It seems quite clear that the trichina is not killed by putrefaction of the pork, or by freezing it, or by salting. It does not seem yet certain whether smoking kills the trichina as completely as it does the cysticercus; certainly many are killed, and, if the process is continued long enough, perhaps all.

Water.—Dr. Woods, Staff Assistant-Surgeon, has published a paper* on the determination of organic matter in water by means of a standard solution of permanganate of potash. He points out the fallacies and difficulties of this method, which he tested by means of a great number of experiments not detailed in the paper, but concludes that with proper precautions it may be made to give reliable results. The solution of the permanganate is made of a strength of 1 milligramme to 1 c.c., and it is graduated as usual by means of a standard solution of oxalic acid; a litre of the water to be examined, mixed with 2 c.c. of strong sulphuric acid, is heated to 140° Fahr.; the lamp is removed, and the solution of the permanganate is dropped in. The process is ended when the slightest red tint, permanent for half an hour, is obtained. From the total quantity of permanganate used 0.24 c.c. are deducted, as this is the amount of perman-

* 'Journal of the Chemical Society.' 1863.

ganate necessary to give a red tinge to 1 litre of the purest water. Five milligrammes of organic matter decompose 1 milligramme of permanganate, and, as each c.c. of the solution contains 1 milligramme, the amount of organic matter is at once obtained by multiplying the number of c.c. used by '005.

Of course, the varying composition of the organic matter, and the state of chemical change in which it may be, influence the result; but, at any rate, a standard of impurity is thus given which will be very useful to medical men.

Mr. Nicholson, Staff Assistant-Surgeon, has also published in the same journal (December, 1862) an account of an improved method of analysing water by the soap test. The paper must be consulted for the details, which are too long to be given here. The plan has been partially tested by Mr. Sutton,* who has made two comparative analyses: the results in one were very accordant with those given by the balance; in the other case the agreement was not so good. The method certainly requires very great care, but, as far as can at present be said, gives accurate results; and, as it requires very little time for its performance, it seems likely, in the hands of those who will use it accurately, to be useful.

A few observations on the propagation of typhoid fever by means of impure water are subsequently related. A good instance has been given in the American war of an outbreak of diarrhœa caused by drinking impure surface-water. It ceased when wells of 20 to 30 feet deep were dug.—*Extracts from Professor Parkes' Review of the Progress of Hygiene, Army Medical Report, 1861.*

ART. XXXIII.—*Modern Hygiene.*

"Were a sanitary code to be established for this or any other country, its provisions, to be sound, would be as simple as few.

"The first provision in such a code would secure—that brick and cement should form the wall of every well from which water is procured.

"The second,—that brick and cement should seal over every cess-pool and sewer.

"The third,—that perfect drainage-flow and perfect flushing of drains should be secured to every town and village.

"The fourth,—that sufficient house-room and plenty of pure air be supplied to every man.

"The fifth,—that whenever an epidemic should show itself, the cases should be isolated, and the excreta of the patients be immediately removed.

"This is the simple sanitary code required; for as the causes of diseases have human bodies for their habitat and starting-points, and

* 'A Treatise on Ventilation, Natural and Artificial.' By Robert Ritchie, C.E., 1862. Pp. 232.

as one person may propagate a disease to a thousand as easily as to one, so the prevention of disease in one individual may save the thousand from the ravages of the disease as well as the one, and so mortality will be lessened wholesale, as diseases are stopped individually. Private hygiene, or, as it has been called, 'hygienic treatment,' such as the physician has to exercise, is included in securing obedience to the general laws. Give the man sick with epidemic disease fresh air, give him uncontaminated food and drink, remove his excreta carefully, and isolate him as far as possible; for the disease is in the man, and if it be sharply policed it will travel no further.

"These rules are not mere statements, they are the results of experience. I have traced the most contagious of our epidemics, scarlet fever, into large schools, and have confined its ravages to the imported case, by isolating the patient. I have seen a whole population saved from the recurring havoc of typhoid by a new provision for so disposing of the excreta that men shall not have such excreta again, till the vegetable world has disinfected them, and every week of my life adds some new fact to the truth of this argument. Whether the specific poisons of the specific diseases will ever be isolated, analysed, and described, is an open question. We are far from such a point now, and if preventive medicine progresses, the diseases we have treated of may perhaps die out before science has attained to the discovery of their first causes.

"In concluding this chapter relating to hygiene, I may briefly remark that for some years I have regarded ozone as nature's great disinfectant. I have therefore prepared it artificially, in the way that Schönbein first proposed, and used it advantageously in situations where free ventilation of pure air could not be secured. I may perhaps, at some future time, give the results to the profession."—*Dr. T. H. Barker on Malaria and Miasmata*, pp. 219, 220, 230.

ART. XXXIV.—*Army Medical School, Netley.*

The following is the concluding portion of a most able address by Professor Longmore :—"I have already called your attention to the progress the Army Medical School has made, and the work it has accomplished, up to the time of its removal from Fort Pitt to Netley. If time were available, I would gladly enlarge upon its future prospects. Time will not permit this; but I may just call attention to the special advantages which it offers to the older surgeons of the Army, in addition to those it affords to the cadets who are only preparing to enter its ranks. All who have an intimate acquaintance with the medico-military service in regiments, and in most staff situations, know that the ordinary pressing duties of each day's demands, the current professional and military business, so occupy and distract the attention of medical officers, that leisure and energy are rarely to be found for that close study which is necessary for

deep research in the several scientific branches of their very varied functions. If surgeons in the Army, in addition to their ordinary professional duties, and notwithstanding the frequent interruptions to which they are subjected by the calls and circumstances of military life, by constantly recurring changes of residence, and other disturbing agencies,—if they keep up an acquaintance with what may be regarded as the surface-movements of medical experience, and of the sciences associated with, and accessory to, the advancement of medical knowledge, as these are depicted in current professional literature,—if they do this, they will do as much as they are likely to achieve while on active employ. Hence one important boon presented to such officers by the Army Medical School. It affords to surgeons, when they can be spared from their more active duties, the opportunity of a place of occasional resort for refreshing acquaintance with the more intricate parts of professional knowledge,—a retreat where, surrounded by incentives to study, with leisure for its pursuit, with all improvements in mechanical aids and appliances within reach, they may follow up inquiries in which their previous practical experience will give them all the deeper interest. This is a benefit the practitioner in civil life can rarely enjoy. Again, one other source of usefulness to which this school may be rendered subservient is, if sufficient confidence in the ability of those who are connected with it be established, that it may become a court, as it were, to which the higher authorities may apply for assistance in considering the questions and fresh views which are constantly arising connected with the practice of our profession in military life, and in determining by experimental research various matters of scientific interest having relation to the subjects of its special studies. The school has already been useful in carrying out some investigations of this nature. We may safely assert, then, that the Army Medical School gives fair promise of increasing in favour in a like proportion to that which it has already acquired, because there is a reasonable prospect of its usefulness being more and more extended. And with this wider sphere of usefulness, with a better appreciation of its value as its nature and objects become more generally known, with the increased accommodation afforded by its new habitation, and consequently enlarged opportunities offered to medical officers of benefiting by the advantages it presents to them,—if these advantages are not neglected,—and through the general diffusion of higher attainments in the various branches of knowledge which conduce to the due discharge of the function of maintaining a high standard of health in large bodies of men,—in all these ways will be promoted the welfare of the officers and soldiers of the Army, for whose benefit, as its ultimate object, the institution was established. And we may safely conclude that as these results develop themselves,—and they cannot be concealed if they grow as I have supposed,—just in proportion as they make themselves manifest, will the worth and importance of the position of the medical officers in military organization be appreciated by the combatant portions of the Army. I regard the improvements which I have indicated as the surest means of our attaining the advantages of an

improved status. I do not mean simply advantages arising from a bare definition of regulated degrees of relative rank, to which some seem to have attached so much importance, but that indefinable, yet real, status and consideration which is more of a nature to be felt than expressed, and which as a scientific corps, as a body composed of individuals entrusted with the lives and health of some of the country's best servants, as men, too, necessarily exposed to special risks in the discharge of our professional avocations, we shall, beyond all doubt, some day receive, not by partial but universal assent."—*Prof. Longmore's Introductory Lecture at the Opening of the Sixth Session of the Army Medical School, Lancet, May 9, 1863.*

ART. XXXV.—*The Queen's Visit to the Royal Victoria Hospital.*

"The first public act of the Queen after her bereavement has been a characteristic one. On the 8th of May she paid a long visit to the military hospital at Netley, the foundation stone of which she and the Prince Consort laid nearly seven years ago. The commandant of Netley, Colonel Wilbraham, received notice from Osborne, that the Queen would visit the hospital, but instructions were sent to make the visit perfectly private, and consequently every step was taken to secure this. The Queen arrived at half-past three, accompanied by Prince Alfred and Prince and Princess Louis, and attended by Lady Mount-Edgcumbe, Lord Charles Fitzroy, Sir Charles Phipps, Sir James Clark, Major Cowell, etc. Her Majesty expressed a wish to visit first the foundation stone. She stayed here a few minutes, but it was evidently a painful reminiscence. She bore it, however, firmly, and then entered the hospital. It was intended to take her only into three or four of the wards to show her the arrangements, but she desired to go into all the wards. On being told that there were no less than 99 wards, she said she would then visit as many as she could, and she did actually enter a very great number. In the first ward into which she went, a Victoria Cross man from India was lying very ill in bed. She immediately went up to him, addressed him most kindly, and sent for Dr. Maclean, the officer in charge of the division, to tell her about his state. She continued this in every ward into which she entered. Whenever she saw a man very ill, she walked up to his bed-side, spoke to him, inquired about him from Dr. Longmore or Dr. Maclean, and showed the greatest interest in his case. In one ward an incident occurred which affected those who were present. An old soldier from India lay nearly at the point of death. After the Queen had spoken to him, he said, 'I thank God that He has allowed me to live long enough to see your Majesty with my own eyes.' The Queen and the Princess Alice were both touched by this speech, which came from the very heart of the dying man.

"The aspect of the whole hospital was indeed extremely touching.

It is now almost filled with Indian invalids, splendid old soldiers, bearded and bronzed, many of them magnificent men of the ante-Crimean class. They thronged the corridors, drawn up in lines, and absolutely devoured their Queen with their eyes. She kept bowing to them as she walked along, making inquiries about the arrangements of the hospital from Colonel Wilbraham and Inspector-General Anderson.

"The Queen then re-embarked, after spending nearly two hours in the hospital. Everybody connected with the institution was, of course, most highly gratified, not merely with the honour of the visit, but with the way, at once so thoroughly royal and womanly, in which she had shown her interest in her sick soldiers. The Queen's appearance was deeply interesting. When she is silent, her face is sad, and bears the marks of a heartfelt and abiding sorrow. Her smile is, however, as gracious as ever, and her voice, though low and very gentle, has all its old sweetness and clearness."—*The Lancet*.

ART. XXXVI.

The limits to which we are restricted allow us to notice only the titles of the following papers:—

Case of Gunshot Wound of the Face (with Engraving). By M. F. Manifold, Surgeon, 34th Foot.—*Med. Times and Gazette*, Jan. 24, 1863.

Case of Spontaneous Closure of the Axillary Artery after Division by a Gunshot Wound; Recovery of the Patient. By W. C. Calthrop, Esq., M.R.C.S., Surgeon and Agent to H.M. Coast-Guard.—*Lancet*, August 8, 1863.

On a Case of Laryngitis in an Adult, in which Tracheotomy was twice successfully performed, with an interval of six weeks between the operations. By M. Broke Galwey, Esq., Staff Surgeon-Major.—*Lancet*, March 21, 1863.

Case of Aneurism of Aorta, communicating with the Pulmonary Artery. By Jeffrey A. Marston, M.D., Royal Artillery.—*Archives of Medicine*, No. 13, 1863.

Temperature of the Human Body after Death. By W. C. Maclean, M.D., Prof. of Mil. Medicine, Army Med. School.—*Lancet*, Jan. 3, 1863.

Report of a Case of Lateral Transposition of the Heart and Liver in a Soldier. By W. C. Maclean, M.D., Dep. Insp.-Gen.; Prof. of Mil. Medicine, Army Med. School.—*Lancet*, Aug. 8.

Statistical and Clinical Notes. By John Rose, M.D., Surg. R.N.—*Lancet*, Sept. 5, 1863.

On a Case of Inguinal Hernia, treated successfully on Prof. Chisholm's Method. By James J. Dickinson, Esq., Bengal Medical Service.—*Ib.*

Case of Excision of the Knee-Joint for Scrofulous Disease of the

Bones.—By Staff-Surgeon T. W. Fox, M.B., Army Med. Depart.—*Army Med. Report*, 1861, p. 483.

Works recently published.

On some of the more important Diseases of the Army, with Contributions to Pathology. By John Davy, M.D., F.R.S., Insp.-Gen. of Hospitals, H.P. Pp. 438.

Physiological Researches. By the same Author. Pp. 448.

On the Growth of the Recruit and Young Soldier, with a view to a judicious selection of "Growing Lads" for the Army, and a regular system of training for Recruits. By William Aitken, M.D., Prof. of Pathology in the Army Med. School, etc. Pp. 70.

Military Surgery. By Geo. Williamson, M.D., Surgeon-Major 64th Regt. (J. Churchill and Sons).

The Science and Practice of Medicine. By W. Aitken, M.D., Prof. Pathology, Army Med. School (C. Griffin and Co.).

From the above works we have made a few extracts, which are duly acknowledged.

PART II.

MEDITERRANEAN STATION.

ART. XXXVII.—*On the Health of the Troops serving in the Mediterranean.*

Sickness and Mortality.

I. GIBRALTAR.

THE average strength of the garrison was 5520 non-commissioned officers and men, among whom there were 5119 admissions into hospital, 35 deaths in hospital, 8 out of hospital, and 7 among invalids after their return to England, making a total of 50 deaths. These numbers show the cases to have amounted to 927, and the deaths to 9·06, per 1000 of the strength; the former being an increase of 98, and the latter a decrease of 2 per 1000 on the results of the previous year.

Continued Fevers were much more frequent than on the average of the two preceding years, and nearly twice as fatal. The 2nd Battalion 7th Regiment suffered most severely, having had 175 cases and 7 deaths. Next in frequency was the 2nd Battalion 8th Regiment, in which 101 cases occurred, but only 2 proved fatal. The Royal Artillery had 95 cases, with 5 deaths. The surgeon of the 7th Regiment attributed the great prevalence of the disease chiefly to the over-crowding in the Windmill Hill Barracks, to the exposure of the men to the heat of the sun on the public works, and to the imperfect state of the drainage and sewerage. It appears that the average cubic space per man in the barracks, while occupied by this corps, was only 322 feet; that fever became more than usually prevalent in February, and attained its maximum in April (an earlier period than that at which fever is usually most prevalent in Gibraltar), and that it abated in the corps after changing their barracks in the beginning of June. In June, upon the representation of the surgeon, the length of time the men were kept during the day upon the public works was reduced. The surgeon of the 2nd Battalion 8th Regiment attributed the excess of fever in it chiefly to the defective ventilation and over-crowding of the Wellington Front Bar-

rack, in which a portion of the regiment was quartered between February and October, the period during which the greater number of cases occurred.

II. MALTA.

The average strength of the troops during the year, exclusive of the Royal Malta Fencible Artillery, was 6185. The admissions amounted to 4775, and the deaths to 69, of which 54 occurred in hospital, 5 out of hospital, and 10 among invalids on their passage home and at the invalid depôt at Fort Pitt. These numbers give the proportion of 772 admissions, and 11·15 deaths, per 1000 of mean strength, being a considerable reduction in the former, and a very trifling increase in the latter, compared with the results of the preceding year.

There has been a marked reduction in the prevalence of miasmatic and enthetic diseases, and in those of the respiratory, digestive, and integumentary systems, compared with the average of the two preceding years. The only class in which there has been an increase is that of diseases of the reproductive organs. The mortality by miasmatic diseases is much below the previous average, but that by tubercular diseases has experienced a considerable increase.

Ophthalmia has been much more prevalent than during the two preceding years. The excess has taken place in the 3rd, 15th, and 23rd Regiments, in which the admissions were 140, 239, and 137 respectively; while in the Rifle Brigade they amounted only to 8, and in the Royal Artillery to 14. Although the numbers in the 3rd Regiment are high, they show a great reduction upon the admissions in 1860, which were 216. The surgeon of the regiment attributes much of this improvement to the removal of four companies to Pembroke Camp in April, immediately after which there was a marked diminution in the number of cases. In the 16th Regiment there was a very great increase in the amount of ophthalmia, compared with 1860, when the numbers were 46. The surgeon attributes its prevalence to the dark, damp, and ill-ventilated state of some of the barrack-rooms at Fort Ricasoli, and to exposure to the sun's rays. In the 23rd Regiment the surgeon believes the exciting cause of the disease to have been "the quantity of fine dust that floated in the atmosphere in the neighbourhood of the barracks, and more particularly on the road to Polverista, where it lay in heaps on the ground, and on being disturbed by the wind or by the marching of the troops, clouds were raised so dense that it was almost impossible to see. This, no doubt, was the exciting cause, and when the disease once became established, there was everything to favour its continuance and propagation, the men having been crowded together in ill-ventilated rooms, and with very imperfect means of ablution." On Surgeon Tydd's recommendation a water-cart was provided, and the roads in the vicinity of the barracks were watered, after which, he states, the disease began gradually, but steadily, to subside.

ENTHETIC DISEASES.—The reduction in the amount of venereal is very satisfactory, and is stated to have arisen from the greater

strictness with which the police regulations have been carried into effect.

HYGIENE OF MALTA.

The General Report of the principal medical officer intimates that the new stone barracks at Pembroke Camp, St. George's Bay, were completed this year, and occupied by troops.

These barracks, situated about four miles from the town of Valletta, and in one of the most salubrious localities of the island, are ranged in six "block" buildings, looking south-east and north-west, four composed of fourteen rooms, and two of seven. Each room is constructed to hold fourteen men, at the full amount of 600 cubic feet of space to each individual. The rooms are represented to be airy, well ventilated, and thoroughly lighted. In front of each block extends a veranda, supported on pillars and arches. A spacious mess-room and quarters for thirty officers are provided. The drainage is reported to be good, and the means of ablution ample; the men having also an especial facility for sea-bathing during the summer months. The system of latrines attached to these new barracks is approved of; but Surgeon-Major Langley, principal medical officer, takes very positive objection to that of having a urinal placed in a corner of each room,—it gives occasion to frequent complaints, in consequence of the foul and ammoniacal emanations experienced; and he observes that although the urinals were only intended to do away with the old system of night tubs, yet a disadvantage remained in it being found impossible to prevent the men using the room urinals by day.

Considerable improvement having been effected in 1860 in the rooms of the Lower St. Elmo Barracks, by the introduction of upright air-shafts opening on the roof, and of perforated zinc plates in each window, the good effects of the measure were, in the opinion of Dr. Langley, evidenced by the excellent health enjoyed by the battalion which occupied them during 1861.

The Sanatorium at *Citta Vecchia* is reported to have realized fairly the good results expected from its institution. During the summer months it afforded considerable relief to the regimental hospitals, and proved of special value in fever cases, rendering their convalescence much more speedy, and in many instances doing away with the necessity of invaliding the men to England.

III. IONIAN ISLANDS.

The average strength was 4064, the admissions into hospital amounted to 3548, the deaths in hospital to 41, and out of hospital to 41, and 1 invalid died at sea on his passage home, making a total of 46 deaths. The ratio of admissions, therefore, was 873, and of deaths 11.32 per 1000 of mean strength, being higher than in the preceding year, but lower than in 1859, and considerably below the average of previous periods.

Continued Fevers have been greatly in excess of the previous average, the admissions having amounted to 212 per 1000 of the strength. The excess was chiefly in the 2nd Battalion 9th Regi-

ment, at Argostoli, in Cephalonia, and the 2nd Battalion 4th Regiment, quartered in Fort Neuf, Corfu. The 2nd Battalion 2nd Regiment, in the citadel, Corfu, had also a considerable number of cases, while the Royal Artillery and Engineers were remarkably exempt. In the 1st Battalion 9th Regiment, quartered in the Old Venetian Barracks, Corfu, fever also became very prevalent; but it immediately abated on the removal of a large detachment to Vido in the end of July. In Corfu the disease began to prevail in June, attained its maximum in August, and had subsided by the end of September. The medical officers concur in attributing its prevalence to the over-crowded state and defective ventilation of the barracks, and to the generally defective sanitary condition of the town. These views are borne out by the facts of the greater amount of fever in the Fort Neuf Barracks, which are situated at the spot where one of the largest town-drains empties itself into the tideless harbour, and of the subsidence of fever in the 1st Battalion 9th Regiment, as soon as the over-crowding was relieved by the removal of a large detachment to Vido. In Cephalonia, fever broke out among the troops early in July, and continued till the beginning of October. In an average strength of 543 men, there were 258 cases in three months, but none of them terminated fatally. The first cases occurred in the band of the regiment, which occupied the ground-floor in the Moscopoli Barrack, and it then broke out in the new North Barrack. These are both hired houses, and the drainage of them is described as most defective. The disease among the men of the band was believed to be purely of local origin, and to have been caused by the drains passing directly under the rooms. The band was removed to the second floor in the same house, "with almost immediate benefit," room being obtained for them by encamping a portion of the regiment.

The deaths by continued fevers all occurred at Corfu; 9 were in the 2nd Battalion 4th Regiment, 7 in the 1st Battalion 9th, 4 in the 2nd Battalion 2nd, 2 in the Royal Artillery, and 1 in the Royal Engineers. Although the cases were so numerous in Cephalonia, they were of a mild type, and all recovered.

SANITARY STATE OF THE IONIAN ISLANDS.

General Health of the Troops.—Though the health of the troops in these islands during the past year has been much better than the average of this station, it was far inferior to that they enjoyed during 1860, when the daily sick was only 33·6, and the death-rate from all causes only 6·3 per 1000.

This increase of sickness and mortality in 1861 was due to an epidemic typhoid fever which prevailed, during the autumn months, throughout the command, though it only proved fatal at Corfu, where bad sewerage, over-crowding, and other defective sanitary arrangements, were superadded to miasmatic influences.

It is sad to find, in spite of all that has been spoken and written regarding sanitary reforms, that in an important garrison like this, 42 per cent. of the admissions and 63 per cent. of the deaths should

still be due to diseases believed to be preventible; and to this large waste of life by zymotic diseases there has to be added the still more deplorable results of crime and violence. Of the 45 deaths that occurred in the force in 1861, 5 are directly due thereto. One man was murdered and another executed, two committed suicide (one by cutting his throat and one by blowing his brains out), while a fifth died in a wine-shop immediately after swallowing a large quantity of raw spirits.

A poor fellow of the 2nd Battalion 2nd Regiment was drowned by stepping into the citadel ditch in the dark while on sentry. This leaves 39 deaths from disease, of whom 26 died at Corfu from typhoid fever. Though stray cases of this disease proved fatal throughout the year, it was not till July that the disease appeared as an epidemic, and this it did simultaneously throughout the command; and it seems to have prevailed throughout the Mediterranean generally, as some of her Majesty's ships brought well-marked cases of typhoid fever from Malta.

At Cephalonia, the admissions from fever during the months of July, August, and September, amounted to 255, being 47 per cent. of the strength. Neither there nor at the smaller islands did any of the cases prove fatal; while at Corfu, out of 987 admissions there were 26 deaths. The disease was not equally prevalent and fatal throughout the latter garrison. At Fort Neuf, the sanitary state of which has long been rendered abominable by its vicinity to the mouths of the town sewers, the ratios of admissions and deaths per 1000 of strength were 323 and 12; while in the citadel, where no such gigantic nuisances exist, the ratios were only 176 and 8·8.

On the Extent of Invaliding among the Troops serving in the Mediterranean.

During the year, 51 men were sent to England from Gibraltar, 57 from Malta, and 74 from the Ionian Islands, recommended for discharge from the service as invalids; and 126 from Gibraltar, 54 from Malta, and 28 from the Ionian Islands, were sent for change of climate.

It appears that the invalids discharged in 1861 have been nearly double the average of the two preceding years, and this increase has been more marked in the numbers from Gibraltar than from the other two commands. As formerly noticed, Gibraltar contributes a high ratio of invalids from pulmonary and also from cardiac disease, and the proportion from dysentery and hepatic disease is likewise high.

ART. XXXVIII.—*On the Health of the Naval Force serving in the Mediterranean.*

Thirty-five vessels were employed in the Mediterranean in 1860, with a mean force of 14,210 men. The total number of cases of all

kinds of disease and injury amounted to 20,915, so that the cases were in the ratio of about 1.5 per man. The number of men sent on shore to hospital is unusually large, namely, 1131; 988 were invalided, and 145 died, the former being in the ratio of 69.5, and the latter of 10.2 per 1000 of mean force.

Compared with the preceding year, there is an increase in the average number of men daily inefficient through disease and injury. The loss from fevers is precisely the same, namely, 2.9 per 1000 of force; but there is a notable increase in the ratio sick of pulmonary complaints, which will be elsewhere explained. There is also a considerable increase in the ratio daily sick of venereal, rheumatism, and ulcer, but a decrease in the ratio sick of phlegmon and abscess. The total number daily sick on board ship and in hospital has been estimated at about 823,—equal to the crew of an ordinary line-of-battle ship, or in the ratio of 57.9 per 1000 of mean strength, which exceeds the ratio of the preceding year by about 6.4.

Fevers.—There were 815 cases of continued and remitting fever, and 175 of an intermitting type; of these, eighteen were invalided, and seventeen terminated in death.

In the vessels of a smaller class, fever was most prevalent in the 'Amphion,' the 'Doris,' and 'Racoon;' two of the cases which occurred in the latter ended in death. The surgeon of the 'Amphion' mentions that the lower deck of that vessel was badly ventilated; to this, and the heat of the weather during the summer months, he attributed an increase in the number of sick. In November, while at Malta, the ventilation was improved by air-tubes with cowls; the former passed down into the interior of the ship, and large openings were cut in the funnel-casing on the lower deck, and fitted with doors, which, when open, admitted both light and air.

In the 'Renown' there were ninety cases of fever, sixty-six of which are reported as ephemeral, and eight were of an aguish character, leaving sixteen only of the common remitting form. The worst cases occurred at Naples during the hot season. The ship had then been lying for a short time within 700 yards of the main sewer of the city, the offensive odours from which were frequently perceptible on board; subsequently, however, she was moved 600 yards further off, when the febrile attacks became less frequent, while the general health of the ship's company began to improve.

Small-Pox.—The total number of cases of small-pox in eight of the thirty-five vessels employed on the station amounted to 153, of which eight terminated in death—a loss which, notwithstanding the protective influence of vaccination, shows the necessity of adopting strict segregation whenever the disease makes its appearance in a ship of war; but this becomes still more apparent when it is stated that in four vessels there were 149 cases, and the deaths, eight in number, were confined to three of these, namely, the 'Hannibal' (in which the disease acquired great severity), the 'Amphion,' and 'Agamemnon.'

Respiratory Organs.—There is a large increase in the ratio of inflammatory affection of the lungs and pleura, and also of consumptive disease, owing to the prevalence of these affections in two or three of the larger vessels; whether from causes peculiar to these

and not to other ships in the squadron, or from some special virus or infection existing amongst their crews, is a question of no slight importance. The first to be noticed is the 'St. Jean d'Acre,' which was by far the most sickly ship on the station. She arrived in the Mediterranean about midsummer of the preceding year, and soon afterwards her crew began to suffer from febrile and pulmonary complaints. The latter, however, did not for a while occur in greater numbers than generally happens amongst other newly-raised ship's companies. During January, February, and March she visited Argostoli, Zante, and Corfu; at the last-named island she remained throughout February and part of March, and then returned to Malta, where, with the exception of a few days spent at sea, she remained until the 15th of June. The state of the weather was such as usually prevails in the Mediterranean at that season of the year; the crew were well supplied with fresh meat and vegetables, and were occasionally permitted to land for recreation and amusement. These were the very conditions or circumstances under which it might have been expected they would improve; nevertheless, in April their health generally began to decline. This naturally induced the surgeon* to endeavour to find out the cause; and as usual in the naval service, his attention was first directed to the state of the decks and holds. In one of his reports he mentions, that for a long time the state of the lower deck, on which the men slept, had attracted his notice as being imperfectly ventilated, especially during the night-time. "All the ship's company, amounting to about 930 men, with the exception of the cooks and about forty boys, slept on this deck. The hammock-hooks were placed ordinarily at only 14 inches apart,—less than the average breadth of the men's shoulders, consequently, while in harbour, when no watch was required at night, and all hands turned in, they formed a compact mass close beneath the beams, the only air available for respiration being above them, that beneath the hammocks being almost entirely shut out from the space above. All the ports, as well as the small round scuttles, were kept closed at night; the small square central scuttles were, however, ordered to be kept open, though, on account of the cold wind which came through them, they were frequently closed by the men who slept next to them. The hatches were covered with gratings, but sometimes the open spaces in the gratings were accidentally obstructed by lumber. The only other means of admitting fresh air were three windsails, leading down to the cock-pit, which it was difficult to keep properly trimmed, and in calm weather they of course were entirely useless."

He further mentions that the decks were frequently wetted. "Each mess was permitted to have a certain portion of fresh water for personal and general washing purposes, and, after it had been so used, it was again used for washing the lower deck, which, though of hard oak, retained the moisture for a long time afterwards, particularly during the prevalence of sirocco winds."†

* Dr. Edmonds.

† This questionable mode of cleaning the lower deck was practised in

As the season advanced, the temperature on the lower deck increased. In April, he found a difference of from 8° to 12° in the air below and above the hammocks; thus on the 8th of April the temperature below the hammocks was 69° , while above it was 81° ; the impurity of the air was supposed to be increased in a still greater proportion. As soon, however, as the lower deck ports could be partially opened at night, and all the gratings on the hatchways removed, the difference between the temperature of the air above and below the hammocks was greatly diminished; in May it averaged about 75° below and 81° above: but notwithstanding this improvement in the ventilation, there was no interruption to the steady increase of pulmonic disease.

Early in June, by directions received from the Commander-in-chief, the ventilation was still further improved by making two of the stoke-hold ventilators to communicate with the lower deck: "subsequently, two ventilators were carried from the fore-castle through the sick-bay and lower deck into the fore cockpit, with a valve communication into the lower deck and cowl above; two other ventilators of the same kind were carried down from the poop into the lower deck, where they opened before the mainmast; these, however, were intended to be used chiefly as uptakes. Fifteen ventilating holes, 10 inches by 3, were cut externally on each side, opposite the level of the upper deck, opening into the longitudinal channels, and leading down to the shelf-piece on the lower deck, the perforated covering before which was removed, leaving open the channels, which also led down along the side of the ship to the bilges; and, in addition to these alterations, a hundred men who had slept on the lower deck were removed to the deck above, on which there was still abundance of room. The lower deck ports were kept open night and day, and the round scuttles removed."

On the 17th of June the ship sailed with the squadron, and subsequently anchored in Navarino Bay, where, with the exception of a few days, she remained until the 10th of July. Here the crew had frequent opportunities of purchasing vegetables, fruit, and potatoes, of which they freely availed themselves, and lime-juice and sugar were issued daily in the usual proportions; still the tendency to disease of the respiratory organs continued to increase: exclusive of catarrhal attacks, upwards of fifty cases were placed on the sick list during May and June, thirty-three of which were thought to be of a phthisical character.

On the 22nd of July the 'St. Jean d'Acre' was detached from the squadron and sent back to Malta, where she remained until the 2nd of September. The weather became oppressively warm, the thermometer ranging from 82° to 88° between decks, though all the ports, scuttles, and hatchways were continually open. About the middle of September the number on the sick list, exclusive of those sent to hospital, amounted to sixty-five, the majority of whom were suffering from pulmonary complaints of a phthisical, or at all events of an

the 'Juno' on the Australian station in 1856, and was supposed to have been in some way connected with an epidemic of a dropsical character.

asthenic character; and many by this time had been invalided, and sent to England as unfit for further service on the station. The ship's company were frequently permitted to land on leave; they had abundance of fresh provisions, and notwithstanding the amount of sickness, they appeared to be in good spirits.

"While at Malta, the fore magazine was cleared out for repairs. Beneath the magazine, over the bilge and kelson, a quantity of shot and ballast had been placed, which was found to be mixed up with a kind of black mud, of an unctuous appearance; how it came to be there was not known, but it was speedily removed, and the space thoroughly cleansed. This matter or mud was free from smell, though some of the men employed in removing it appeared afterwards to suffer either from the heat and closeness of the magazine, or from some imperceptible emanation from the mud; they complained of being out of health, of pain in the chest and shortness of breath, slight at first, but gradually increasing, until they were compelled to seek for medical assistance."

On the 1st of September the ship went on a cruise off the island. For the first few days the wind was light, the weather hot and oppressive; but as one watch was required on deck both night and day, the air between the decks was much more pure and wholesome than when in harbour; the weather was fine and all the ports were kept open, consequently the heat, on an average, did not exceed 82°. With all these advantages, additional cases of the prevailing disease continued to occur; the ship therefore returned to Malta, that the worst cases might be transferred to the naval hospital, or invalided and sent to England. On the 12th she again went to sea, with 45 men still on the sick list; by the 18th the number amounted to 66. On that day she approached the harbour, and 10 more of the worst cases were sent to the hospital; but by the 22nd the number of sick again amounted to 66. The weather now changed suddenly; the heat and sirocco gave place to cold northerly winds, with fogs; the temperature fell from 83° to 78°, and the wind rose to half a gale; but there was no check to the sickness. Consequently, the ship was ordered by signal to re-enter the harbour, and 21 additional cases were sent to the hospital. Though the crew had all along been well supplied with fresh meat, vegetables, and fruit, some of them began to show symptoms of a scorbutic nature, and they all had a weak, cachectic appearance. On the 4th of October 43 were invalided, most of whom presented signs of congestion, if not of consolidation, of the lobes of the lungs; these, with 43 others who had been previously invalided at the hospital, embarked in the 'Himalaya' on the 6th, to return to England.

After this, the attacks became more numerous than ever. On the 9th, 15 cases were added to the sick list; on the 10th, 26; on the 11th, 21; and on the following day, 17,—making the total number sick 102; while the hospital on shore, to which many cases had been sent from other ships, was so full that it could not well accommodate any more patients.

As this peculiar form of disease did not exist in the majority of the vessels of the squadron, it was naturally supposed to be con-

nected with some cause within the 'St. Jean d'Acre;' the crew were therefore removed into the 'Hibernia,' in order that she might be cleared out; and, for a few days after their removal, the attacks became less numerous, and the disease more amenable to treatment.

When the stores, tanks, and provisions had been removed from the holds, the channels draining into the bilge were found to be obstructed by mud and *débris*, and higher up, where the channels were covered, they were partly filled for some distance up with decaying chips and sawdust. "In the ship's bottom there were several small leaks, which, in the course of twenty-four hours, admitted several gallons of very offensive fluid of a black colour, the noxious effects of inhaling the vapour of which were perceptible on several persons." This, together with the effluvia arising from the decaying woody *débris*, in connection with a diseased state of the blood, consequent on the continued inhalation of impure air from the crowded state of the lower deck, the surgeon considered a probable cause of the disease. Any contagious disease, he adds, would, under such circumstances, have probably assumed grave proportions; and of this there can be no doubt. "As it was, the lungs seemed to be most obnoxious to the deleterious influence, which manifested itself either in the form of congestion, inflammation, or tubercular deposit. It seemed, also, to favour a kind of scorbutic diathesis, although, the crew being well supplied with an abundance of wholesome food, no adequate cause could be assigned for this condition."

On the 3rd of November the crew returned to the ship, when she was ordered to proceed to Gibraltar.

In the remarks appended to his journal, the surgeon mentions that the disease attacked, pretty equally, seasoned men and boys who had just entered the service. He did not think there was any reason for supposing that it depended on the physical condition of the crew, for, from the first, they appeared to be of fair average strength, though, unlike other newly-raised ships' companies, they did not fill out and improve, but, on the contrary, they rather fell off, and soon began to manifest a predisposition to pulmonic complaints. Thus it became tolerably evident that, whether their sickly condition was to be ascribed to wet decks and bad ventilation, or to some other cause, there could be no doubt that the evil existed within the ship.

"Comparatively few of the patients complained of sudden accessions of illness. Pain in the chest was the most general symptom; there were also shortness of breath on exertion, a quick, weak, excitable pulse, and they looked cachectic. Cough was not generally an early symptom, though it occurred afterwards. Expectoration comparatively was rare; in some it was muco-purulent; in one individual it was copious and melanotic in appearance, but this was exceptional and not permanent; constant headache was present in a large proportion of the cases. Pain was often referred to the epigastrium, and in a few there was much irritability of the stomach. The pain in the chest and difficulty of breathing was generally worse at night, and there were night-sweats, but without previous pyrexia; palpitation of the heart was a very frequent symptom."

"On examining the chest by auscultation and percussion, abnormal sounds were generally heard, varying from an unusual coarseness of the respiratory murmur in the upper lobes of the lungs to decided evidence of pulmonary induration, whether from hepatization or the deposit of tubercle I cannot decide; in several cases, however, which had a fatal termination, the latter condition was indisputably present. The symptoms, both general and physical, were all suggestive of phthisis in its early stage. Still a great many of those who were invalided rapidly improved when they arrived in England, and soon afterwards were able to rejoin the service. Scorbutic symptoms were present in a large number of cases, though they likewise occurred separately."

After a very long and stormy passage, the 'St. Jean d'Acre' arrived at Gibraltar on the 14th of December; she remained there until the 20th, and then sailed for Lisbon, which, in consequence of the state of weather, she did not reach until the 29th. On that and the following day 32 cases of pulmonary disease were sent on shore to the temporary naval hospital, leaving 15 on board for want of room. Latterly, though the crew continued to be well supplied with fresh provisions and lemon juice, scorbutic complaints became much more numerous than they had been previously; 16 cases were added to the sick list during the quarter.

The total number of cases of this singular epidemic, together with cases of undoubted consumption, and cases of inflammatory affections of the respiratory organs, from the time of its commencement in April or May, when the vessel was at Malta, up to the end of the year, amounted to 285; of these 112 were invalided, and 6 terminated in death.

In his nosological synopsis, the surgeon, after due consideration, adopted the following arrangement of these cases, viz.—

Bronchitis	7
Pleuritis	19
Pneumonia	13
Hæmoptysis	7
Phthisis	102
Pleurodynia	20
Cachexia pulmonalis	117

The latter are those in which the physical signs of phthisis were not fully developed; they were characterized principally by debility, loss of flesh and strength, general cachexy, and congestion in the upper lobes of the lungs. The number of cases of phthisis is unprecedented; but as many of the patients recovered soon after they returned to England, and rejoined the service, it is to be hoped the recoveries were equally numerous amongst those who were finally discharged from it.

Various opinions appear to have been formed by the medical officers of the squadron with reference to the origin and character of the disease. It is generally admitted that the crew originally were somewhat deficient in physical development; that the epidemic originated within the ship, probably from defective ventilation and

offensive effluvia; and that the atmosphere on the lower decks, being loaded with carbonaceous matter and the foul emanations or exhalations arising from nearly a thousand men, was, when the hammocks were down, totally unfit for respiration and the re-oxidation of the blood. Whether the blood of individuals whose health had thus been impaired did not throw off in the process of respiration some contaminating halitus or agent, which poisoned the blood of other individuals in health, and produced the same kind of disease in them, are questions which deserve to be carefully examined; for there is really no other mode of accounting for its continuance, and for the numbers attacked after the holds had been cleared out and the ventilation improved,—though the holds, indeed, appear to have contained no other kind of matter or impurity than what may be found to a greater or less extent in nearly every vessel in the navy.

It has already been mentioned that the 'St. Jean d'Acre' arrived at Lisbon on the 29th of December, when as many patients were sent to the small temporary naval hospital as it could contain. The surgeon* of the hospital observes, that "in six weeks, 44 were received for the treatment of pulmonary affection, or its sequelæ. These cases presented different characters; in 32 the most urgent symptoms were constriction of the chest, asthma, and cough; in 2, palpitation; in 5, rheumatism in various parts of the body; in 1 there were symptoms of œsophagæal stricture; and in 4, symptoms of inflammation of the lungs.

"The constriction or pain of the chest was the most general symptom: in some the pain was superficial, elicited by gentle pressure on the surface; in others it appeared to be more deep-seated. The constriction or short windedness in many had been produced originally by the pulmonary affection; in several it was supposed to have been in existence previous to their entry into the service, but had been aggravated by the disease contracted in the 'St. Jean d'Acre.' In some the cough was not attended by any expectoration, whilst in others the mucous secretion was abundant.

"The last 4 cases sent from the ship for the treatment of the pulmonary affection came under my observation shortly after they fell ill. In these there appeared to be inflammation of the posterior part of the lower lobes of the lungs; in 2, of both lungs; in the other 2, of the left lung only. The disease commenced by inflammation of the extreme tubes of the bronchia, and spread to the cells; thence to the parenchyma. The symptoms were as follows:—pyrexia; pulse 104 to 120; skin hot, breathing oppressed, respiration varying from twenty-four to forty per minute; pain of the chest; cough, at first without expectoration, but subsequently attended with viscid or tenacious sputa.

"The health of most of the men received from the 'St. Jean d'Acre' improved; but the constriction of the chest and asthmatic symptoms remained in the greatest number for a long time after their reception."

A somewhat similar disease made its appearance in the 'Cressy,'

* Dr. Donnett.

about the same time, and in the same place; but the cases were by no means so numerous, nor so generally destructive of health. During the year 82 cases—namely, 63 of inflammation and 20 of phthisis, were placed on the sick list against 285 in the 'St. Jean d'Acre;' but while there were only 73 cases of catarrh in the latter, there were 188 in the former. Of the cases which occurred in the 'Cressy,' 48 were invalided, and 3 terminated in death—a loss, though small, compared with the number invalided and dead in the 'St. Jean d'Acre,' which nevertheless must have impaired the general efficiency of the ship.

"The Causes.—Excepting the 'St. Jean d'Acre,' a fine large roomy ship, and well ventilated, at least compared with the 'Cressy,' I have not heard of any ship's company, either in present or past years, who have suffered to an equal extent. I have already stated my belief in the presence of a ship-malaria, which may have tended to induce a large number of the cases of bowel complaint which prevailed at all seasons."

"The question as to the origin of the disease resolves itself into three heads; the physical character of the men, the locality or position of the ship, and the state of the ship herself. In 1859, she was hastily manned and sent to sea; the men were gathered from all quarters, and many of them had been examined on their entry by civil practitioners at the out-ports. Out of 730 borne on the ship's books, 511 were under twenty-six years of age, and for the most part inexperienced in a sea life; they did not acquire physical strength either so fast as might have been expected or was required for seamen in the Royal Navy. After they had been two years on board, it was remarked that they looked pale and deficient in muscular development. The disease appears to have affected all ages and classes nearly in the same proportion; but it did not prevail on shore, or among the troops stationed at Malta.

"The only ships' companies which suffered severely were those of the 'St. Jean d'Acre' and 'Cressy.' In some respects the disease differed in the two vessels; in the latter the lower lobes of the lungs were most frequently affected, in the former the upper lobes; yet the ultimate tendency—the formation of tubercles—appears to have been the same in both. Malta harbour and the adjacent sea seemed always to produce an unfavourable effect on the crew. One fact deserves to be noticed, and it is this, that however much I have been disposed to blame the ship, nevertheless, after leaving Gibraltar to return to England, the disease ceased, and slight cases rapidly recovered."

The ship was kept clean, and as the disease spread, her ventilation was improved; but though attempts were made to trace the supposed malaria to its source, it does not appear that they were successful. . . .

By the returns received from the 'James Watt,' it would appear that although she visited Gibraltar, Malta, Corfu, and Naples, pulmonary disease did not prevail to the same extent in her as in some of the other ships of the line. There were only 3 cases of phthisis, 27 of an inflammatory character, and 136 of catarrh, entered on the

sick list; yet, by referring to the Tables Nos. 3 and 4* it will be found that 33 cases of phthisis were invalidated, and 4 died. It is therefore to be supposed that many of the men sent on shore to hospital for other complaints, were attacked with phthisical symptoms during their residence in that establishment. The total number sent to hospital for disease and injury during the year amounted to 88, and of these, 12 only were affected with pulmonary complaints; so that, admitting the diagnosis on board to have been generally correct, and that these 12 cases subsequently became phthisical, this would still leave the all but incredible number of 21 attacked by phthisis after their admission into the hospital. The occurrence of so many cases of consumption, if indeed it were consumption, amongst so few men, is a most remarkable circumstance, and seems, as it were, to point to the hospital as having also, like the 'St. Jean d'Acre,' become a distinct and an independent focus of infection; and if this were the case, it could only be from the concentration of so many cases of the same disease within its walls. On the other hand, if we admit the theory of a special ship-malaria, it would be just as reasonable to suppose that the majority of the patients had been infected before they were sent to the hospital, though the disease existed only in a latent form.

In the 'Marlborough,' the flag-ship, with a crew of upwards of a thousand men, there were but few cases of pulmonary disease. She was well ventilated, but the lower decks in the summer time, in consequence of the distilling apparatus, were almost insufferably hot. Seven cases of phthisis were invalidated, but no death took place. The arrangements made for ventilating this ship, and providing sleeping room for the crew, are especially deserving notice. They are thus detailed in the remarks appended to the surgeon's† journal:—

"A great improvement in the sleeping arrangements was made this summer, to which the healthy condition of the crew is greatly to be attributed. About one hundred men from the orlop, and nearly two hundred from the lower deck, were provided with sleeping accommodation on the middle and main decks, to the improvement of the atmosphere of the former, and much to the advantage of the men. The means taken to improve the ventilation also deserve notice. Large windsails were in constant use, and, whenever there is any breeze, they most effectually purify the air; but at anchor or during a calm, other contrivances for removing the foul atmosphere become necessary; and this was effected by using canvas tubes in the hatchways, for the uptake of the heated and vitiated air. Spaces also exist in the frame of the ship between the timbers, and which, with the outer and inner planking of the side, form vacancies or square tubes, that in general are of no other use than to allow the air to circulate and keep the framework dry; but, as they also communicate with the holds and bilges, and have openings between the beams, the foul air of the lower part of the ship comes up from below, and escapes on the inhabited decks. To cut small holes in the outer planking for the exit of the air, has a twofold effect,

* See the Official Report for 1860.

† Dr. A. E. Mackay.

about the same escape of the foul air of the bilges, as well as that no means saving-decks. Several of these orifices have been already During the ship with great benefit, and their general adoption is phthisis, highly recommended."

d'Acre, following additional remarks on ventilation are taken from there surgeon's* journal of the 'Agamemnon':—

'C' It was necessary to fit out as expeditiously as possible; and as the ship had just undergone very extensive repairs, consequent on her having been employed laying down the Atlantic cable, she necessarily went to sea in a very rough state, and it required some time, particularly with a raw and inexperienced crew, to bring her into that state of cleanliness and discipline which is requisite in a man-of-war. As the tanks had all been previously stowed, and the engines in good order, there was not much danger of the accumulation of chips of wood or filth in the bilges at the bottom of the ship; and to this circumstance we are certainly, in a great measure, indebted for the cleanliness and sweetness of the bilges, as not the slightest smell of bilge-water has ever been experienced. Great care and attention has, however, been paid by the chief engineer to keep them scrupulously clean and dry. They are regularly white-washed, and the chloride of zinc frequently sent through them: this is greatly facilitated by the ship being always considerably by the stern, which gives a clear run through the bilges to any fluid poured in forward. At first the decks were all carefully scraped, to remove the pitch, etc., which had accumulated upon them; and now they are holystoned once a week, and regularly scrubbed every morning, except during damp or wet weather, when the lower deck is not wetted. Warm water is merely sprinkled on the orlop deck every morning, and immediately afterwards it is scraped, so that, with the assistance of windsails, it dries in a very short time; and once a week it is holystoned, and thoroughly cleansed.

"As usual in line-of-battle ships, the majority of the crew are berthed on the lower deck, the boys and a few others on the main deck, and on the orlop deck are the officers' cabins and junior officers' hammocks; forward, the guard, quartermasters, and stokers sleep. The lower deck is 230 feet long, with an extreme breadth of fifty feet, which, deducting the length of the gun-room, gives 200 feet sleeping space for the crew. The orlop deck is 200 feet long, and the engines, funnel-casings, and store-rooms take up about 50, leaving about 150 feet available space for cabins, hammocks, etc. This space, however, is somewhat curtailed by the cable-tier and sail-room. On the lower deck the space allowed for each man is about fourteen inches, and they certainly appear rather crowded, though not more so than is usual in the service; but, as we have had no very hot weather, and the temperature of the deck can always be regulated by lowering or sloping the ports, or opening the scuttles between each port, it is generally very comfortable, and the temperature not much above that of the external air. On the orlop deck the ventilation is obtained by means of windsails and

* Dr. A. Graham.

scuttles. There are four hatchways, down three and 4* it will be are led, the other not being available on account of 14 died. It is after one is principally for the use of the engine-room, ore to ho-serves to ventilate the after cockpit and bread-room. The 7mptoms windsail is of great use, and is led into the boatswain's and ca, number store-rooms, which are thus always kept cool and sweet. The ventd one is down the main hatchway, for the benefit of the centre pa ts ; the deck. The scuttles are eight inches in diameter, but they cly only be kept open in moderate weather, and being principally placed in the officers' cabins, are not of very great use in the ventilation of the deck. The engine-room, situated in the after-part of the ship, is very open and airy. The stoke-hole is roomy ; it is ventilated by four large metal tubes, led down from the deck, and also by the after windsail ; and it is considered by the engineers to be a comparatively cool one. The average height of the thermometer, as compared with the external air, is as follows :—When the steam is not up, the temperature under ordinary circumstances is much the same as the external air, but after steaming for some time, it ranges from 100° to 110°, the external air being 70°. On account of the engines being placed aft, and the draught created by the fires, the foremost part of the deck is kept pretty cool when the steam is up ; but when distilling water, the heat, in consequence of the pipes being led along the upper part of the deck, is very great, and were it long continued, would render the orlop uninhabitable.

“With regard to the ventilation of ships in general, it must be confessed that, considering the advanced state of science in the present age, it is not in so satisfactory a state as could be wished ; and, so far as I know, few attempts have been made to improve it within the present generation. The subject is a difficult one, but one well worthy of consideration ; and it would be the greatest boon to the service were some scheme discovered which would supersede the plan at present in use, for it is almost an impossibility to ventilate a deck generally without causing currents of air, that are not injurious to some persons. It has, therefore, often occurred to me that now, when every ship is a steamer, the engine-room might be made of more use as a means of ventilation ;—some method might be devised to disperse air more generally throughout the ship, particularly below, either by means of the small engine, or a small furnace causing a draught of air through a shaft at the opposite extremity of the ship, and passing in perforated tubes through the holds or along the decks, somewhat after the plan long ago advised by Dr. B. Reid. These, however, are mere passing remarks, and not intended as recommending any particular plan, for the invention of which I possess neither the ingenuity nor the talents.”

Such were the arrangements in this vessel when she first arrived on the station. Subsequently they appear to have been altered, for in a later return the surgeon remarks that—“During the hot weather of summer, great attention was paid to the ventilation of the decks at night, so that, by the disposal of wind-sails, sloping the ports, and dividing the men as much as possible amongst the different decks, they might sleep as cool and com-

fortable as possible. By a register of the thermometer kept on the lower deck, and taken four times during the night, I find that during the months of August and September, the hottest in the year, the highest temperature was 86° and the lowest 69° , the temperature of the external air being about 4° lower. The temperature was highest at midnight and at two o'clock A.M., cooling down 3° or 4° by four o'clock. In the cells, which are situated on the orlop deck, and close to the engine-room, I was afraid that the temperature would be too high to admit of their being used for the confinement of prisoners during the summer; but by boring a double row of holes round three sides, the temperature was found never to exceed that of the lower deck, and much more frequently it was 2° or 3° lower, so that they were always used when necessary without any inconvenience."

How far these alterations were instrumental in preventing the evolution of pulmonary disease in the 'Agamemnon,' there are no means of ascertaining; but it deserves to be noticed, that though she was employed in the same localities and duties as the 'St. Jean d'Acre' and 'Cressy,' but few cases of a serious nature occurred on board during the year; four of consumption were invalided, and one only terminated in death. . . .

In the 'Victor Emanuel,'* besides about 103 cases of catarrh and sore-throat, there were 6 of inflammation of the respiratory organs, and 9 of consumption, placed on the sick list; but by referring to Tables Nos. 3 and 4,† it will be seen that 12 cases were invalided; and 6 (5 of consumption and 1 of inflammation) terminated in death. Eight cases were invalided on board, all the others at the hospital; and all the deaths occurred either at hospital on the passage home, or in the home hospitals.

With reference to the influence of offensive effluvia in ships of war, it is of importance to notice that in this ship there was for some time a very disagreeable odour, which apparently came from the bilge. "In some of the officers' cabins the smell is very offensive, and the paint becomes yellow, sometimes even black. At one time the ship was overrun by rats, and they were frequently found dead and in a state of putrefaction in the holds and bilges." Subsequently they decreased in numbers. "The bilges are always kept clean and dry, and every means taken to ventilate the ship by the hatches and windsails." "Sometimes the bad odour seems to proceed from the ship's lining; this may be owing to chips of wood having been left there during the repairing, caulking, or even the building of the ship. The chloride of zinc is constantly thrown into the bilges after they are pumped out. Of late, however, it has been found to be a better plan whilst in harbour to introduce fresh water daily into the bilges, to leave it there until the following morning, and then to pump it out." It is fortunate, for the sake of truth and a right appreciation of the influence of bilge-water effluvia on health, to know that no disease of any importance occurred in this ship; for it is by no means unusual to ascribe to conditions similar to those

* Dr. E. Nolloth, Surgeon.

† See the Official Report for 1860.

just mentioned, the power, not only of damaging health, but of producing specific diseases.

"By way of further ventilating the ship, nine square holes were cut in her sides (nine on each side) just below the upper deck, and communicating with the ship's lining; considerable benefit soon seemed to be derived from this arrangement." . . .

By the quarterly returns received from the Deputy Inspector-General in charge of the Naval Hospital, it appears that at the commencement of the first quarter there were 12 cases of phthisis remaining from the preceding year, and 33 were received during the quarter, making the total number remaining and admitted 45; of these, 34 were invalided, 1 was cured and discharged, and 2 died. During the second quarter, 80 cases were admitted; none were cured; 61 were invalided, but no death occurred. During the third quarter 112 cases were admitted, 2 cured, 54 were invalided, and 3 died. During the fourth or last quarter, 44 cases were admitted; 3 were cured, 109 invalided, and 2 died, leaving 10 under treatment at the end of the year. A few cases were also sent to the military hospitals at Gibraltar and Corfu, from which there are no returns. It thus appears that 281 cases were received into Malta naval hospital during the year, of which 6 only recovered and were discharged to their ships, 7 died, and 258 were invalided; a loss so enormous, especially when compared with the loss by death, that may well create some doubt with respect to the real character of the disease; for if it had been true tuberculosis, it is singular that amongst so many cases the deaths should have been so few.

In the nosological return for the quarter ending 31st March, the Deputy Inspector-General* states that phthisical cases, as usual, had been numerous, and that patients had been received labouring under the disease in various stages of advancement. Elsewhere he mentions, "that the general character of the diseases treated, occurring, as they mostly did, in subjects impaired by long service and previous disease, as in the case of pensioners, or in men recently entered with physical powers below par, and constitutions for the most part weak, and prone to the development of tubercular disease on slight causes, rendered a generous diet, with wine or porter, necessary not only for their recovery, but for the re-establishment of their normal health and strength."

In the succeeding report, terminating on the last day of June, in connection with the increase of consumptive diseases, he mentions, that "many of the men sent to hospital suffering from other affections, on being examined, the existence of phthisical symptoms was detected, which might perhaps have existed previously, though they had escaped detection. The majority of the cases occurred in men who had been recently entered, in whom the disease is readily developed from slight causes, such as the baneful practice which exists of crowding the lower deck of ships of war to excess during the sleeping hours, when ventilation is defective, or entirely absent, and the air becomes so vitiated as to render it quite unfit for respiration;

* Dr. Armstrong.

hence tubercular disease is readily developed where any predisposition exists." . . .

"The broken-down cachectic and scorbutic-like condition of all the phthisical patients rendered their early removal from the climate of Malta a matter of necessity. The cases of congestion, which were nearly all received from the 'St. Jean d'Acre,' had a scorbutic appearance, which with propriety might have been designated true scurvy; but the prominence of the chest affection from the passively congested state of the lungs, led me to retain the above designation, that being nominally the disease for which they were sent to hospital."

It will be observed that the description of the disease given by the respective medical officers of the ships in which it prevailed most, does not agree in many points; still the differences are not essential, and that it was identically the same there is little reason to doubt. Whether, in the majority of the cases, notwithstanding the similarity of the symptoms to those of phthisis, the disease was really of a phthisical character may be doubted, seeing the number of patients who subsequently recovered after their return to England. The number of cases which appear to have been developed amongst patients ill of other diseases in the hospital, is a most remarkable feature in the history of the complaint, and, admitting the diagnosis to have been generally correct, might lead to the inference that it was communicable even in the well-ventilated wards of that establishment, and to men who had not been exposed to the exciting cause or poison in any of the infected ships.

The total number of cases of consumption entered on the sick books of the squadron amounted to 261, or in the ratio of 18·4 per 1000 of mean force, while the number invalided amounted to 387, or at the rate of 27 per 1000; it would thus appear that the number invalided exceeds the number entered on the sick books. This is to be explained by the occurrence of cases amongst men already on the sick lists, or in hospital for other diseases. The deaths from phthisis amounted to 34, or at the rate of 2·4 per 1000 of mean force,—a mortality which, notwithstanding the apparent increase in the number of cases, does not exceed the annual average for the preceding four years. It is therefore difficult to imagine that the disease could, at least in a large majority of cases, have been true tubercular phthisis, otherwise the subsequent loss by death would have been much greater than it was.

Syphilis.—Syphilis was considerably more prevalent than during the preceding three years; whether in consequence of its increase amongst the community in the several seaports of the Mediterranean, or from the men having had more frequent access to the shore, there is no means of ascertaining; but it was the opinion of some of the most observant of the medical officers that the disease had become much more common amongst the lower orders at Malta since the abrogation of the law relative to the registration and examination of prostitutes. Eighteen cases were invalided, but no death occurred during the year.

Boils.—During August and September common boils became almost epidemic in the 'Marlborough'; the surgeon* thought they

* Mr. H. J. Domville.

might be attributed to a combination of agencies, amongst which, he says, "the great heat, exciting an unusual degree of action in the functions of the skin, may be considered as a primary cause. The weather throughout the epidemic was remarkably serene, the sky invariably of a clear deep blue, while a thin white haze bordered the horizon to seaward. The temperature in the shade was very equable, though the direct heat of the mid-day sun was intense; the atmosphere was dry by day, and the dews scanty by night. The occupation of the crew was limited to exercise aloft twice a week, and divisional drills between decks or under awnings. Bathing was allowed twice a day; the supply of fresh meat and vegetables was ample; the general appearance of the crew was indicative of robust health, though hundreds of them were suffering from prickly heat. Most of those who were suffering from this troublesome affection escaped boils while it lasted, and it was observed in several instances that when the eruption suddenly disappeared, a crop of boils made their appearance."

Scurvy.—A scorbutic tendency made its appearance in the 'Alacrity' in October while in the Gulf of Venice. Although only one case was placed on the sick list, yet the sponginess of the gums, and the appearance of discoloured spots, like bruises, on the abdomen and the lower extremities of several of the crew, sufficiently indicated the character of the disease. This was the more remarkable, as they had not been more than ten days consecutively on salt provisions for a considerable time. A sudden fall of the thermometer was thought to have had some predisposing influence or effect in producing the disease.

It has already been mentioned that a kind of scorbutic tendency accompanied the pulmonary complaints so prevalent in the 'St. Jean d'Acre,' and in several other vessels of the force; but whether it was true scurvy seems to be doubtful, as their crews had not experienced any of those alimentary privations which usually produce this disease.

Wounds and Injuries.—The total number of deaths from external violence and drowning amounted to 40, or 2·8 per 1000 of force, a loss which is nearly equal to a third of the total mortality.

Invalided.—The loss under this head is very large, being nearly one-half greater than the average of the four preceding years. The total loss by invaliding was 988, or in the ratio of 69·5 to the 1000 of mean strength, 6·1 for injury, and 63·4 for disease, the increase on the ratio of the previous year being on the latter.

The total loss by invaliding and death amounted to 1133 men, or at the rate of 84·4 per 1000.—*Naval Med. Report, 1860.*

ART. XXXIX.—*Report on Fever (Malta).*

By ASSISTANT-SURGEON J. A. MARSTON, M.D., R.A.

This elaborate and lucid essay is devoted to the subject of fever generally as an army disease, and to the forms of fever incidental

to troops serving in the Mediterranean, "using," says our author, "the records of the Royal Artillery Hospital, as a test only, on which to base the whole amount of my experience and observation."

Dr. Marston had been led to this subject by several considerations, of which we may mention the especial attention he had been obliged to give to fever as a disease at Malta, the relations which fevers there bear to those observed at home, and the modifications of the symptoms induced by climacteric influences.

From inquiries made, he states that fever generally, and the enteric form in particular, prevails more among the troops than among the natives of the island.

This essay extends over thirty-five pages, and deserves to be carefully read and studied. We regret, therefore, that our extracts must be very few, and confined mainly to the subject of the remittent fever of Malta. Alluding to the doctrine of specific diseases having specific causes, he says:—

"It is highly probable that some atmospheric conditions 'beyond our ken' enter into the creation and spread of the fever poison. If within the limited area presented by a regiment or garrison we can more leisurely and exactly trace the steps of progression of a disorder, it must not be lost sight of that there are other causes and influences at work, upon a far larger scale—waves of diffused influence. In the Mediterranean the death-rate averaged formerly 17 per 1000, generally lowest at Gibraltar, and highest in the Ionian Islands. In 1859, although the total death-rate at Gibraltar and the Ionian Isles had fallen considerably, yet the prevalence and mortality from fever in the latter station and Malta had risen. The same epidemic influence affected both stations contemporaneously. Upwards of 400 men, out of a force whose mean strength varied in the course of the year from 2100 to 3060, were attacked with fever (typhoid?), and 21 died in Corfu alone. At Malta the death-rate rose from 16·77 (its former average) to 19·02 per 1000; 47 fell victims to fever in that garrison, giving a mortality of 1 in 28 total fever cases. Gibraltar, upon the other hand, seemed to have escaped any epidemic influence, for in 1859 we find that the total death-rate had fallen from its former average of 13·58 to 7·75 per 1000. During the succeeding year typhoid fever could not be said to have prevailed at Malta in an epidemic form, it having been replaced by other and milder types of fever. Shortly after this (1860) we read of its prevalence in the capital of Austria, and in 1861 along the shores of the Spanish peninsula.

"As far as Malta is concerned, we find (in 1859) the main centres of the disease localized in their former sites—Upper and Lower St. Elmo and Floriana—indicating the continuance of some sanitary defects upon which the poison had fixed as a nidus."

Dr. Marston sums up his remarks on the subject of typhoid fever in the form of propositions as follows:—

"1. That typhoid fever is endemic rather than epidemic; when the latter, it is often remarkably circumscribed within one or more limited spheres.

"2. That it is, in all probability, contagious; but that this is in-

adequate to explain all its outbreaks, and that contagion is to be held in the light of a subordinate rather than a primary and principal cause of its spread.

"3. That typhoid fever is, probably, etiologically allied to other diseases, such as gastro-enteric ones, having either a different or allied pathology.

"4. That, in its origin and spread, it has an intimate connection with bad drainage and fæcal fermentation.

"5. That the products of such fermentation may be varied in many ways, and that so, in all probability, they may also give rise to diseases differing from typhoid fever.

"6. That enteric or typhoid fever is capable of spontaneous origin, as opposed to that of continuous succession from the bodies of individuals under its influence.

"7. That it ordinarily commences about autumn, and reaches its acme of prevalence soon after that season, continuing through the winter in mild climates, but ceasing towards the spring.

"8. It is probable that the character and constitution of the season exert some influence. *Qy.* It has appeared in Malta more than once, after hot and dry summers, with the first autumnal rains.

"*Age*, doubtless, exerts a predisposing influence.

"Typhoid fever is not a disease of advanced life. Only two cases of the disease have occurred in men above the age of thirty, in the Royal Artillery and Engineer corps. At the same time, it must be remembered that the majority of sappers and gunners serving in Malta are young men.

"*Acclimatization* appears to exert some influence of a protective nature. The inhabitants of Malta suffered in a far less degree than the troops, and the older residents have been, very rarely, the subjects of enteric fever."

Simple Continued, Ephemeral, Febricula, or Maltese Fever.

"The latter is the term by which a short and non-dangerous fever of a continued form is characterized alike by the medical men and their patients.

It lasts, generally, from three to five days, and more rarely seven days. During the years 1855-56, when a large body of young troops were temporarily stationed here, *en passant* for the Crimea, I had the opportunity of observing and treating perhaps a hundred cases, as well as of comparing observations with an army surgeon, long resident here.

The disease seems to arise from exposure to the sun's rays or to some alterations of temperature, upon the part of one who is the subject of constipation and portal congestion. Those who have suffered from ague elsewhere, are more particularly prone to attacks of this disease. New comers (particularly persons under twenty-five) are liable to suffer from it. It is incidental to the spring, summer, and commencing autumnal periods of the year. After an exposure to the sun, or to some fatigue, the patient complains of shivering,

sense of weariness, headache, muscular pains, anorexia, and thirst. This is rapidly followed by pyrexia, a pungently hot skin, a frequent, sharp pulse (the frequency bearing no proportion to the danger, for it is never fatal), constipation, arrested secretions, and pain in the eyeballs, which are tender to pressure also. Occasionally, though very rarely, there is delirium at night. It is a curious fact, that the last symptom (delirium) I have never observed among the men; it has been only among officers attacked that it has appeared, and then but rarely. This depends, probably, upon some psychological reasons. The disease generally terminates by a critical discharge, and, if mild, in about seventy-two hours. As in almost all diseases here, there is a tendency to a remission of the fever during the day, and to an exacerbation at night. The excretions, during the period of attack, are diminished; bowels confined; skin hot and dry (ranging from 99° to 104° F.), and the amount of water in the urine is much below that of health. Coincident with recovery, some critical evacuation, apparently, occurs; the quantity of solids and water in the urine, passed in twenty-four hours, is much increased: in some cases, these double the amount passed upon the preceding day; or an equivalent excretion occurs—as profuse perspiration, diarrhœa, or epistaxis. . . .

This disease has an intimate relation to the other fevers and dysentery, for it occurs among the same men, under the same influences, and at the same periods, and, like them, it is occasionally followed by rheumatism. It is best treated by a mercurial or saline purgative, followed by quinine.

Of late years, it has seemed to me that the prevalence of this three-day fever has considerably diminished, while other febrile diseases, of a severer character and longer duration, have made their appearance. Fever of longer duration (five to seven days) is also more common than it was.

The civil surgeons practising here consider that a very marked change has taken place in the type of fevers generally. They are in the habit of referring the date of such alteration to the period of the Crimean war. However this may be, typhoid and fevers of long duration appear to be more common than they were six or eight years ago.

Mediterranean Remittent. Gastric Remittent Fever.

“By this is meant a fever characterized by the following symptoms and course:—A preliminary stage of subacute dyspepsia, anorexia, nausea, headache, feelings of weakness, lassitude, and inaptitude for exertion, mental or physical, chills, muscular pains; lastly, a fever, having a very long course—three to five or ten weeks—marked by irregular exacerbations and remissions, great derangement of the assimilative organs, tenderness in epigastric region, splenic enlargement, slight jaundice, without any exanthem. Neither bronchitis nor diarrhœa, as a rule. The patient is prone to relapses, and the disorder is followed by a protracted convalescence and a chloro-anæmic aspect; very frequently also by rheumatism of some form or other, but without any tendency to lesion of the peri- or endocar-

dial membranes. Pathologically, it is marked by congestion or inflammation, with softening of the enteric mucous membrane (particularly that of the stomach and duodenum), without any lesion of the Peyerian follicles, but with hypertrophies of the liver and spleen.

There is no fever so irregular as this in its course and symptoms. The disease prevails particularly during the spring and summer months (less so during the autumnal period of the year), and, generally, during years in which the typhoid form is in abeyance. It replaces, and is in turn replaced by that fever (typhoid), and sometimes occurs concurrently with it.

The natives of the place are affected in a much less degree than those temporarily residing here; and of these latter, the older residents appear to evince the greatest proclivity to the disease.

It affects, *par excellence*, young men, under thirty-five, particularly those of rheumatic diathesis; next in frequency, children; most infrequently, the aged.

Nature of the Disease.—A consideration of this disease—its long duration, comparative non-fatality, the absence of exanthem, pulmonary disease, marked diarrhoea, and those abdominal symptoms characterizing typhoid—will, I think, altogether remove it from that disease with which, at one time, I confused it. The morbid anatomy, also, proves that the lesions discovered are not identical with these of enteric fever. To a certain extent, it corresponds with Wunderlich's description of erythematic gastritis. Still, the duration, regular course, febrile symptoms, their remissions, the relapses and sequelæ, remove it from any mere local gastro-duodenitis or gastro-enteritis. The nearest approach to the elucidation of its pathology is to be found in Dr. Peacock's admirable lectures upon 'The Remittent Fevers prevailing in the Metropolis.' Dr. A. Anderson, of Glasgow, has described a gastric fever apparently identical with that now described.

When this form of fever attacks children (which it frequently does), it is apt to leave behind it an enlarged condition of the spleen, difficult to remove. In these patients it becomes, I verily believe, impossible in many cases to distinguish it from enteric fever or strumous dyspepsia.

Upon the causes affecting the production and prevalence of this disorder, I would now offer some remarks. I fancy that we may perceive the operation of two agencies: 1, the effects, whatever they may be, induced by residence in a hot, moist climate; 2, certain localized conditions connected with drainage and dampness.

The climate of Malta, during the summer and autumn, approaches to that of the tropics, and exerts a similar influence upon the system. Most English residents suffer during the hot season. Atonic dyspepsias, attended with enlarged spleens, and short, sharp febrile attacks, resembling intermittent, are common during that period of the year. Neuroses, particularly of the sympathetic system, such as gastrodynia, etc., are frequent. Anæmia, and a gradual but marked deterioration of the constitution, are the results of long residence in the Mediterranean. The children of the English residents afford a valuable and delicate test of this. They become

anæmic, lose their appetites, and slowly waste during the hot season. Ague is not prevalent as a disease, but aguish patients are cured with difficulty. Whether all this be the result of malaria, it is difficult to determine; but that it is the result of "climate," there can be little doubt.

If I were asked to indicate the cause of this disease, I would suggest the defective house-drainage. Without wishing to speak at all dogmatically upon this point, I would go further and say, that the products resulting from fæcal decomposition of water-closets, etc., are peculiarly the source of typhoid fever, and the evaporation from damp houses, defective in surface and other drainage, producing other than fæcal stinks, are the agents in the gastric remittent type. I have no evidence whatever of the disease just described being contagious.

Treatment of the Gastric-remittent form.—In many cases of this disease I believe the best, and often the only way, to remove the diseased action, or cut short a prolonged convalescence, is removal from the Mediterranean.

When the attack is comparatively slight, the more the patient is encouraged to use some exertion, physical and mental, the better; but in most cases, of course, this is quite out of the question. A hopeful expression and cheerful tone upon the part of the medical attendant are decidedly beneficial in counteracting that morbid despondency which always exists. Attention to ventilation, and the maintenance of a cool state of the sick ward or room, are important, not only, indirectly, in increasing the comfort of the patient, but in beneficially influencing the course and symptoms of the disease. The diet should be very light, small in quantity, and the simplest in quality. Farinaceous food, with an allowance of soup, chicken, fish, and boiled mutton, as these can be borne. Succulent fruit is both agreeable and beneficial; claret likewise. Generally speaking, all stimulation, whether by alcohol or high and full diet, is particularly ill borne: the stomach refuses to digest food. A treatment of the disease upon the assumption that the depressed vital powers must be sustained by a liberal supply of stimulants, beef-tea, etc., is erroneous. The employment of such measures is only to be followed with the view of meeting some very plain indication, or in protracted cases, or during the later stages of the disease.

Quinine and tonics of all kinds almost invariably disagree with the patient, during the earlier stages of the disease. Mineral acids of all kinds are particularly ill borne. Alkalis (soda and potass), with or without a vegetable bitter, such as gentian, quassia, or calumba, agree remarkably well. Quinine, administered with some alkali, is one of the best means of exhibiting that tonic. The occasional exhibition of a mercurial (calomel), combined with ipecacuan and rhubarb, or colocynth, appears to be very useful.

The course of treatment which I have been led to think the best comprises the following measures:—

1. The occasional exhibition of an emetic in the morning. If portal congestion be present, which it generally is, and the motions are disordered, benefit will certainly be obtained from a calomel pill, such as indicated above, with or without the extract of henbane.

2. Counter-irritation over the epigastric region, by means of some liniment, such as croton oil. If the case approaches the bilious type of fever, and the tenderness of the hepatic and gastric regions be marked, cupping, at an early stage, appears to afford much relief.

3. Lemon- or lime-juice, in water, as a beverage. The use of a mixture containing a preparation of soda and chlorate of potash.

4. and lastly. Quinine is first given tentatively, combined with an alkali, and, if it be found to agree, it should be continued; if not, some bitter vegetable infusion may be substituted for it. Should the remissions be well marked, and the gastric irritability great, quinine may be given in enemata.

During convalescence, the citrate of quinine and iron, with strychnia, appears to be an excellent combination.

Narcotics (except henbane) are to be avoided, unless for the attainment of some specific object, when the Pil. Saponis c. Opio, or the Liq. Opii Sedativ. appear to be the best.

I am bound to say that I do not think the disease is ever cut short by any medicine; indeed, remedies exert but little influence over its course.

Treatment of the Rheumatism.—As the rheumatic affection possesses so many points of difference from ordinary rheumatic arthritis, so does it appear to be little influenced by the remedies which are so useful in the latter.

Local applications for the relief of pain, with remedies adapted to the improvement of the health, appear to be the most useful.

Attention to the state of the bowels, and the exhibition of quinine, or quinine and iron with alkalis, seem to me to be the best general remedies.

Small blisters applied at the seat or in the course of the pain, and afterwards dressing the blistered surfaces with morphia, procure relief.

In most cases the hypodermic injection of morphia, or belladonna, has relieved the patient's agonizing pain from sciatica and lumbago; but in only two cases was this plan of treatment at once and permanently curative. In a few cases it failed of giving any relief, but in most it purchased freedom from pain for twenty-four or forty-eight hours.

Should the anæmia be great, and the splenic volume remain increased, then one of two things will cure,—change of air, away from the Mediterranean, or the approach of the cold wintry weather."

Bilious Fevers are next considered. These prevail during summer and autumn; like gastric remittents, the difference between them, though great, being still only one of degree. The treatment is thus described :—

"*Treatment of the Bilious Type of Fever.*—Upon the treatment of this type of fever I would make a few remarks. As soon as the type is diagnosed with tolerable certainty, and during the stage of oppression which ushers in the more sthenic symptoms, let the patient be cupped over the region of the liver and spleen to eight or twelve ounces; allow cupping-glasses to remain, also, for the purpose of dry cupping. Administer a dose of calomel (gr. iv-v), and if the

bowels are not open, give gtt. i-ii of croton oil every two or three hours until free action has been procured. Whilst the glasses are drawing, surround the patient with a hot air or steam-bath (easily enough managed), to induce great and rapid diaphoresis, if possible. Vomiting or gastric irritability is sure to be present, therefore the less the patient takes the better, and that in very small quantities, frequently repeated. Allow ice to dissolve in the mouth, and after the bowels have been freely acted upon, give small quantities of ice and champagne (equal parts champagne and iced water). If hæmorrhage takes place from the gums and mucous membranes, turpentine may be given in scruple doses every hour. During the whole treatment let a large injection of warm water, with grs. x-xxx quinine in it, be administered every three or five hours.

"As the gastric irritability increases, and the pulse acquires a jerky hæmorrhagic character, let a large blister be raised over the stomach and liver by means of a blistering liquid, a poultice or fomentation directly following its application; this saves time, and has less tendency to induce strangury. Emetics I do not advise, as they are apt to induce the vomiting, which is a general symptom of the disease, and so difficult of control."—*Army Med. Report*, 1861.

ART. XL.—*Notes referring to Invalids who are about to proceed up the Nile.*

BY A. LEITH ADAMS, M.B.,
22nd Regiment of Foot.

These stray notes, founded on personal experience, are of much practical interest. The voyage up the Nile is becoming dearer year by year, and may be reckoned, for a party of three, at from £100 to £120 per month. We have space for the following extract only:—

"The grand advantage of the Egyptian climate in winter is its daily serenity and sunshine; however strongly the wind may blow, a sheltered nook, after 9 or 10 A.M., will always be a sunny one. To those, therefore, with susceptible air-passages, it is a matter of no little importance to be aware of this circumstance, and able at the same time to have certain simple measures at their own command, which will modify in a great degree the deleterious influence of the weather. There can be little doubt that the climate of Upper Egypt, Nubia, and the Desert, from their superior dryness, is better suited for the generality of tubercular patients than that of the Delta and the cultivated tracts of the low country. Much, however, depends on the morbid changes which have taken place, or are in course. But Nubia appears to me the climate of all in the Nile valley, between Alexandria and the Second Cataract, that is most likely to agree with phthisical patients, to many of whom the sharp and bracing air of the Desert is too strong."—*Med. Times and Gazette*, July 16, 1863.

PART III.

THE WEST INDIA AND BRITISH AMERICAN STATIONS.

ART. XLI.—*On the Health of the Troops serving in the West Indies.**Sickness and Mortality.*

I. WINDWARD AND LEEWARD COMMAND.

1. WHITE TROOPS.

THE average strength of the white troops during the year was 1259, the admissions into hospital were 1374, and the deaths 7, of which 3 occurred in, and 3 out of hospital, and 1 among the invalids sent to England. These numbers give the ratio of 1091 admissions into hospital, and 5.55 deaths per 1000 of the mean strength; the former being exactly the same as the average of the two preceding years, and the latter under half that average, but identical with the ratio in 1860.

It is noted that "on the 26th of May, yellow fever broke out among the civil population at George Town (Demerara), but chiefly confined to the shipping and the lower orders of Portuguese. As a precautionary measure, on the 3rd of June the detachment of the 21st Regiment was moved by rail from George Town to Belfield, distant about seventeen miles, and was there put under canvas. During the first sixteen days after its arrival there seven cases of yellow fever occurred, all of which recovered, and the disease then ceased among the troops. The disease continued, however, to prevail in George Town and its vicinity till towards the end of December, and, in consequence, the authorities did not consider it advisable that the troops should return from Belfield till the 18th of January, 1862. At Belfield the tents were pitched on a sandy ridge, about 1000 yards from the sea. The surrounding country is low, flat, and marshy, being at high water several feet below the level of the sea, from the irruption of which it is protected by dykes and sluices. As might have been anticipated among troops encamped in such a situation,

intermittent fevers prevailed to a great extent, but of a mild type, none of the cases having terminated fatally. The locality selected was the most eligible that could be found within reach of George Town, and the result, so far as regards the immunity from yellow fever, was satisfactory; but it may be a question whether, under similar circumstances, it would not be advisable to remove the European troops entirely from the colony, unless there were military or political reasons to prevent such a measure.

Between the 26th of May and the 31st of December there were 767 cases of yellow fever treated in the Seaman's Hospital at George Town, of which 92 died; 56 cases in the Colonial Hospital, of which 15 died; and it was stated that about 120 cases, with 18 deaths, occurred in private practice. We have no information as to the numbers living of each of the classes among whom these cases occurred, but the intensity of the disease is shown by the high rate of mortality, which was about one death in eight cases among the seamen, one in four in the Colonial Hospital, and one in six in private practice.

In the end of August a few cases of yellow fever, but of a mild type, occurred among the civil population of New Amsterdam, Berbice, and the sailors on the Berbice River; but the disease did not prevail as an epidemic, and only four deaths by it were recorded.

2. BLACK TROOPS.

The average strength of the black troops throughout the year was 1007, the admissions into hospital among them were 852, and the deaths 21, all in hospital, being in the annual ratio of 846, and 20·85 per 1000 of the mean strength. These results show a very considerable reduction in the sickness, compared with the average of the two preceding years, but merely a trifling difference in the mortality. Tubercular diseases have given rise to rather more than twice the average of the admissions during the two preceding years, and to nearly twice the average of the deaths, but the ratio corresponds closely with that of 1860; so that, whatever may have been the cause of the increase in that year, it appears to have continued in operation in 1861.

II. JAMAICA.

1. WHITE TROOPS.

The average strength during the year was 636, out of which there were 521 admissions into hospital and 6 deaths, being in the ratio of 819 and 9·43 per 1000 of the strength. No deaths occurred among the invalids sent to England. The ratio of admissions is almost identical with that of 1860, but that of the deaths is rather under half the proportion for that year.

There has been an increase in the prevalence of continued fevers and of diarrhoea in 1861, but a very marked diminution in ophthalmia. Although the ratio of admissions by paroxysmal fevers is be-

low the average of the two preceding years, it is more than double that of 1860. This has arisen from the return of the Royal Artillery to Port Royal from Newcastle, where they had been stationed during the latter half of that year in consequence of the prevalence of yellow fever at Port Royal.

Of the cases of paroxysmal fevers, 25 occurred at Port Royal, 17 at Newcastle, and 3 at Up-Park Camp. Calculated on the average strength at the first two of these stations, the ratio of admissions amounts to 312 and 32 per 1000 respectively.

2. BLACK TROOPS.

The average strength of these troops was 536, the admissions into hospital amounted to 678, and the deaths to 10, of which 2 occurred out of hospital. These numbers give the proportion of 1265 admissions, and 18·65 deaths per 1000 of mean strength; the former being greatly in excess of, but the latter much below, the ratios in 1860, which were 818 and 31·42 respectively.

Extracts from the Sanitary Report on Jamaica.

Considering the baneful effects of rum-drinking among the troops in this, as in the West India Islands generally, the Deputy Inspector-General would advise the issue of a daily beer-ration by the Commissariat to them; but the soldier's unaided pay in this colony could not meet the measure, the article being of an expense beyond his means. Intemperance is said to be a still prominent vice among the white troops, and Dr. O'Flaherty expresses his opinion that it is the constant cause of more or less disease and inefficiency in the soldier; conjoining with the vice the extremely monotonous life passed by the Royal Artillery stationed at Port Royal, the depressing circumstance is especially alluded to, on this occasion, of the protracted service of a battery of Artillery at this most isolated post.

In regard to the clothing of the troops, that of the Artillery at Port Royal was still too heavy for the climate, it is reported. Those stationed at Newcastle never wear the close red tunic, it appears, except upon an occasional full-dress parade; all ordinary drills, parades, fatigues, etc., being conducted in the white linen frock recently authorized.

Viewing Newcastle in its special light as a sanitarium, the principal medical officer pronounces that the soldier destined to serve at Jamaica is fortunate in having such a residence secured for him, and, indeed, reverting to the military mortality in the island of times before the resort to this up-station of the Blue Mountains, that a striking contrast in every way presents itself as to the hygienic condition of the white troops. The men, women, and children here are said to look healthy and well, free from the anæmic and bronzed appearance so generally observed in European residents on the lowlands. A good sanitary condition of the station is easily to be maintained, for, although the buildings are massed on a comparatively small area of the mountain side, a strength of 500 troops, having

little other duty to perform, have abundance of leisure to devote to any practicable local improvement of ground, buildings, drainage, etc., and so to add to and support their own highest sanitary welfare.

Newcastle this year might be said to be over-populated, in having an average strength of about 100 more than usual, and than the hut accommodation is intended for; yet the surplus was satisfactorily provided for in tents, and some of the married people were placed in wattle and dab huts, constructed by the men as temporary means of shelter. The tents were double-lined, their floors were boarded, a barrack-cot and bedding were supplied to each soldier, and the occupation of the tent was limited to three men.

It is stated that £100 a year is granted and expended in repairing and extending the drainage of the site, and it is thought that with good care and police the drains can easily be kept in effective state. The barracks are composed of a series of huts, each one of which is thoroughly ventilated through the combined means of roof-ventilators and a large open fireplace and chimney. The windows of the huts are now all glazed, instead of, as formerly, being framed with jalousies, and the improvement was one much required, in sanitary respect, at this altitude, although it is only in wet weather that they are usually sought to be closed.

3. BAHAMAS.

There were no deaths in the detachment of the Royal Artillery, consisting of ten men, nor among the European non-commissioned officers of the West India Regiment.

The average strength of the black troops during the year was 381 men, among whom there were 340 admissions into hospital and 10 deaths, being in the proportion of 892 and 26·23 per 1000 of strength; the former was considerably above, and the latter under, the average of the two preceding years.

4. HONDURAS.

The average strength of white troops was about nine. One, a sergeant-major, died of bilious cholera.

The average strength of black troops was 434, the admissions into hospital 651, and the deaths 7. Two officers died during the year, both of yellow fever.

Mr. Thornton concludes his Sanitary Report with the following picture:—

“The want of occupation and the comfortless quarters are the real causes of the loss of health among the European military, for whom no social life exists at Belize. No roads are available by which to reach the open country: a muddy sea expands in front, and a swamp extends in rear: mosquitoes and sand-flies are a perpetual irritation.”

Mean Daily Sick.

The average number constantly sick in hospital of the white

troops, during 1861, was 43 in the Windward and Leeward Command, and 19 in Jamaica; and of the black troops, 32 in the Windward and Leeward Command, 30 in Jamaica, 18 in the Bahamas, and 19 in Honduras. There was a marked reduction in the average non-effective from sickness, both of white and black troops. The much higher ratio among the black than the white troops in Jamaica, may be traced to the circumstance of their being quartered in the low lands, where intermittent fevers are ripe, while the white troops are in the more healthy climate of Newcastle.

ART. XLII.—*On the Health of the Troops serving in British America.*

Sickness and Mortality.

I. BERMUDA.

The average strength of the troops in 1861 was 1010, the admissions into hospital amounted to 466, and the deaths in hospital to 9, out of hospital to 4, and of invalids 1, making a total of 14. These numbers give a ratio of 461 admissions and 13·86 deaths per 1000 of the strength; the former being considerably below, and the latter above, the average of the two preceding years.

Although the year under review was, generally speaking, one of the healthiest, the fact of 13 deaths, in a total strength averaging 1013 only, seems so much an excess, looking to preventible disease, as to have called for the following relative remark of the principal medical officer, Surgeon-Major Mure:—

“I have only to offer the suggestion, that the authorities should give every assistance and facility possible to the soldier's having the means of rational amusement, so as to wean him from drunkenness; for, although there has been little sickness this year, yet the mortality tables show a melancholy fact, that, without any exception, every death (one of phthisis pulmonalis, perhaps, excepted) has in a more or less degree been directly, or indirectly, caused by dissipated habits.”

Advocacy has been often, in strong appeal, made for the interests of this mind-wearying station of soldiers, in order that every encouragement, through comfort in their barracks (a state still sadly deficient), pleasing and healthy recreations, mental and physical, should be afforded to relieve the embarrassment of idle hours, which are, otherwise, only sacrificed to dram-drinking and concomitant debauchery.

Some efforts would appear to have been made this year to meet so positively required an object, however partial they yet be. A new reading-room and library were expected to be finished very soon for the men, and an additional skittle-ground to be attached to it is advised by the principal medical officer, who also proposes that both alleys should be roofed over,—a necessary measure of protection for two-thirds of the year.

II. NOVA SCOTIA AND NEW BRUNSWICK.

The mean strength of the troops during 1861 was 1725, exclusive of the Royal Newfoundland Companies; the admissions into hospital amounted to 1012, and the deaths to 13, of which 8 occurred in hospital, 3 out of it, and 2 among invalids. The annual ratio of admissions, therefore, was 587, and of deaths 7·53 per 1000 of mean strength.

III. CANADA.

The average strength of the troops throughout the year was 3503, the admissions into hospital were 2090, and the deaths, in hospital 21, and out of hospital, 12, making a total of 33. These numbers give an annual ratio of 597 admissions and 9·42 deaths per 1000 of mean strength.

From the Sanitary Report we extract the following:—

“*Toronto*.—To this upper station the third regiment, of those which arrived from England in July, was forwarded.

Of the regimental report of this station, by Surgeon Read of the 30th Foot, the principal medical officer instances the interest in its reference to the medical topography of the vicinity. Dr. Taylor observes as follows:—

“Mr. Read remarks on the great immunity from disease of an intermittent type at the present time, when compared with former years, and attributes the change more to cultivation of the land than to the influence of such occult causes as act in a cycle of years, and in support of his view, he adduces an opposite illustration to the following purport:—On the east side of the city (Toronto), where agues are quite endemic, the river Don, slowly winding through a large expanse of marshy ground, debouches into the upper end of the roadstead, which, until three years ago, was completely shut off from the lake on the east and south by a peninsula, which rendered the waters in the vicinity of the Don all but stagnant. Within the last two or three years this peninsula near the mouth of the river has been converted into an island by the action of the waters of the lake, and, with the peninsula, the prevalence of ague in that locality has ceased.

“Although the site of the city is comparatively flat, and drainage difficult and defective, the troops are now found to be much less liable to ague than they were twenty years ago, when almost every disease, it is stated, partook more or less of a periodic character. In connection with the foregoing remark as to the decrease of ague, it is to be added that the large common around the barracks is now much improved and brought partly under cultivation; also, that the site of the barracks is beyond the influence of the marshy district in the vicinity of the Don, and that the immunity of the troops from ague took place before the waters of the lake made so successful a ‘sanitary effort’ in that quarter.”

IV. NEWFOUNDLAND.

The

Newfoundland Companies

during the year was 196, the admissions into hospital were 127, and the total deaths 2. These numbers give the proportion of 648 admissions and 10·2 deaths per 1000 of mean strength; the former being about half, and the latter four times, the average of the two preceding years.

On the Extent of Invaliding.

The most striking point under this head is the large number of men sent home from Nova Scotia for change of climate on account of tubercular diseases, and from Canada for discharge on account of diseases of the nervous system. Of the latter, seven were labouring under mental derangement.—*Army Med. Report*, 1861.

ART. XLIII.—*On the Health of the Naval Force serving on the West India and North American Station.*

There were fourteen vessels employed on this station during the year 1860, with a mean force of 2250 men. Total mortality for the year, 99: 12 from wounds, injuries, and drowning, and 87 from disease; the former being in the ratio of 5·3, and the latter of 38·7 per 1000 of mean force,—a vast increase on the death-rate of the three preceding years, which is the more to be regretted as it arose almost entirely from the introduction of yellow fever into four vessels of the force.

Total invalided 81, or in the ratio of 36 per 1000 of mean force, which exceeds the ratio for the three preceding years.

In the medical history of this station there are materials of great value under the head of *Fever*, from which we make no apology for quoting largely.

"Fever.—The contrast between the mortality of the past and present year from fever is very remarkable, and can hardly be regarded without feelings of regret; for it may be fairly doubted whether a large proportion of the deaths from yellow fever might not have been prevented, by strictly adhering to the rules now adopted in the West Indian division of the squadron, with regard to preventive measures and a sudden retreat from the tropics when the disease makes its appearance. Two hundred and ninety-two cases of the common endemic fever were placed on the sick-lists, of which 4 proved fatal; but of yellow fever there were 183 cases, of which 72 terminated in death,—a difference in the relative fatality of the two diseases, which, though there were no better evidence, sufficiently stamps the one as specifically different from the other. The proportion of deaths to attacks is, however, so great in this instance, that it may be doubted whether cases of the yellow type have not been included with the endemic, as the deaths in the most fatal epidemics on record have seldom exceeded one in every three or four attacks. At times, but more particularly when yellow fever is epidemic, it is extremely difficult to distinguish cases of the common endemic from mild cases of the more fatal yellow

type. It is particularly deserving notice, that for a year there was not a single case of yellow fever in the force, though it is reported to have been prevalent in several of the West Indian Islands, and sporadic cases, it is well known, were from time to time occurring at Jamaica.

"The eruption of this fatal disease in the squadron has already been briefly noticed in the 'Statistical Report on the Health of the Navy for 1858.' Since that, other and more circumstantial details have been received, and, amongst others, the medical journal of the 'Icarus,'* one of the most able which has ever been sent to this office, and from which the following extracts have been taken :—

"For several years anterior to 1860, the West Indian Islands had been comparatively salubrious, though it must be admitted that fever could never be said to be absent from certain localities. It may be safely affirmed, however, that Jamaica has, during the first half of the year which has now closed, been quite free from it, no case having occurred at Port Royal until the month of June, when a sergeant of Marines belonging to her Majesty's ship 'Imaum' died of yellow fever, after a few days' illness, and the assistant-surgeon of the 'Icarus' was taken sick at sea on the 24th, *i.e.* the fourth day after leaving Jamaica.

"On comparing the notes of these two cases, though perfectly independent of each other, I found that they were nearly identical in character, and therefore appeared to be due to the operation of the same or a similar cause; and, inasmuch as for some time prior and subsequently to their occurrence, no instance had been known amongst the inhabitants of Port Royal, the inference would be that the cases in question were spontaneous in their origin. It must be mentioned, however, in justice to the opposite side of the argument, that yellow fever was rife at St. Domingo when we arrived there, and that the assistant-surgeon, in his professional zeal, visited some half-dozen cases on shore at Port-au-Prince. Now, the only important question which suggests itself here is, how long may the so-called period of incubation be extended? The facts given in the annexed table may be sufficient to place this question in a clear light for a rational decision :—

"MOVEMENTS OF THE SHIP IN THE MONTH OF JUNE.

	Number of Days.	Places.
June, 1st to 2nd . .	One day . . .	At Aux Cayes.
" 2d to 8th . .	Six days . . .	At sea.
" 8th to 11th . .	Three days . .	At Port-au-Prince, where the Assistant-Surgeon visited cases of yellow fever.
" 11th to 16th . .	Five days . .	At sea.
" 16th to 20th . .	Four days . . .	At Port Royal.
" 20th . . .	Sailed from Port Royal.	
" 24th . . .	Assistant-Surgeon ill with yellow fever.	
" 27th . . .	Died, and was buried at Ruatan.	

* Surgeon J. D. Macdonald, Esq., F.R.S.

“ From the date of leaving Saint Domingo to the first appearance of symptoms, *i.e.* from the 11th to the 24th June inclusive, thirteen days ; and, had the yellow fever patients been visited on the 10th, which I believe was actually the case, it would then be fourteen days, which is not uncommon in the incubation of variola, though nearly twice as long as the period of latency in any other of the eruptive fevers.

“ We are in want of proof of the possibility of the development of yellow fever, independently of any communication with infected places or persons,* as also proof of the possible length of time that may elapse between such communication and the first appearance of symptoms. I shall have occasion to return to this subject presently, in reference to another case, that might at first sight be equally with that above-noticed regarded as having arisen spontaneously.

“ For some time previously to the lamented death of Dr. Mac-lagan, as also all through the month of July following it, febrile symptoms were very frequent amongst the crew, though in only one instance, the particulars of which are given in case No. 15, did they assume a formidable character. They were remarkably diversified, and with me, at least, there was considerable difficulty in classifying them under their proper heads. Indeed, from a retrospect of my own experience, though this cannot be said to be very extensive, I am much inclined to believe that they were due to the more or less ineffective operation of the yellow-fever poison. In this view I am borne out by the lucid remarks of Jackson, as quoted by Martin :—“ The forms of endemic fever are, in fact, so extremely diversified, the symptoms so opposite in their nature to each other on many occasions, as to produce the distinctions of inflammatory, putrid, nervous, bilious, simple, complicated, mild, malignant, *etc.*, from the operation of a cause that is distinctly and demonstrably one.”

“ The discovery of the real cause, or the nature of the poison giving rise to the symptoms which, in their sum, constitute yellow fever so-called, is yet a desideratum to medical science. But that it is endemic, though varying much as to its intensity and the periods of its manifestation in certain localities, or within special limits, cannot be doubted ; for, under similar circumstances, *i.e.* of latitude or climate, certain other localities have never been known to be visited by the disease.

“ What has been just said in regard to yellow fever very strikingly points to the analogous facts in geographical distribution of plants and animals, and in the curious laws that rule both their propagation and decline. But it may be considered probable, though not altogether upon these grounds, that all zymotic diseases—to which class yellow fever, like the plague and glanders, will be ultimately referred without hesitation,—owe their origin to the de-

* See Article “ Medical Statistics,” in the Admiralty ‘Manual of Scientific Inquiry,’ p. 244, showing the absence of such proof in the Naval Medical Returns.

velopment of the humbler and more minute, and therefore more subtle, forms of animal and vegetable life; such being always coincident with a corresponding amount of decomposition and the evolutions of new, or simply liberated, compounds in the gaseous or diffusible form. The presence of offal and filth, or stagnant water with infused animal or vegetable matter, may be regarded as affording something more than predisposing conditions; and such an unwholesome state of things is always present at St. Domingo and at Belize, but more particularly in sultry weather, after heavy rains.

“The whole western or coast district of British Honduras is a vast expanse of low land, whose geological structure I had a good opportunity of investigating at Corosal, which lies about seventy miles to the northward of Belize, and is conterminous with Yucatan. On examination, it presented a hard marine limestone base, overlaid with a thin diluvial deposit (in which the shells of pond-snails (*Ampullaria*) and operculated land-shells (*Cyclophorus*), identical with existing species, abounded), and a supersoil of variable depth. A permanent superficial lodgment of water is therefore easily to be accounted for; and with this must be associated the development of the unicellular and other microscopic plants and animals in great abundance, whose influence as a source of disease is quite as much to be looked for in their death and disintegration as in their rapid multiplication in the living state.

“The periodical occurrence of yellow fever, with intervals of immunity, has its parallel in a fact well known to the students of the *Diatomaceæ* and *Desmidiaceæ*, namely, that particular species which are known to exist in a definite pond or pool one season, may be at another replaced by forms never before detected in the same spot; while, again, the original species, under favourable and often unaccountable circumstances, reappear after the lapse of a certain time. Having thus far digressed, I shall revert briefly to the case of boy Lambert, which merits notice, as bearing on the question of the possible length of the period of latency in yellow fever:—

“MOVEMENTS OF THE SHIP IN THE MONTH OF AUGUST.

	Number of Days.	Place.
Aug. 1st to 15th, A.M.	14 days . . .	At Belize (unhealthy).
“ 15th, P.M., to 17th	2 days . . .	At Omoa (healthy).
“ 17th to 20th . .	3 days . . .	At sea.
“ 20th		At Truxillo (healthy).
“ 23rd		William Lambert taken ill.
“ 27th		Left Truxillo, and reached Ruatan, where Lambert died (on the fifth day of the disease).

“As Omoa and Truxillo were salubrious when we visited them, and yellow fever had just begun to show itself at Belize, suspicion can only be attached to the latter place as the source of Lambert's

attack; and, if this be admitted, the period of latency in this case could not have been less than eight days,—*i. e.* from the 15th to the 23rd of August. As in the case of Dr. MacLagan, above given, that of Lambert was for some time preceded by numerous examples of an apparently simple form of fever; and this, it may be remarked, subsequently continued until, by a re-application of the insidious poison at Belize, a fatal epidemic of yellow fever broke out in the 'Icarus,' commencing, on the 16th of September, with the case of Mr. M'Combie, assistant-surgeon, and of Mr. Puckett, the master. Mention has been made of a sergeant of Marines dying of yellow fever at Port Royal during our absence (and about the time that we lost Dr. MacLagan). Now, although there is no proof of his having communicated with the 'Icarus,' he was certainly very intimate with his colleague, our colour-sergeant; and from what we have since seen, in relation to the extension of the disease to the officers and crew of the 'Imaum' from our own ship, and primarily from person to person, the case cannot be cited, without hesitation, as one arising *sue spontis*. It must be noted that five cases, entered on the list with other complaints, lapsed into yellow fever, and therefore the total numbers should be 104 instead of ninety-nine; and I am not at all sure how many of those placed under the head of Febricula were not in reality due to the more or less ineffective working of the same morbid influence.

"The deaths in hospital were five, and those on board thirty-two; in all, thirty-seven, *i. e.* nearly thirty-seven per cent.; and if to these be added two isolated cases, occurring before the outbreak of the epidemic, our whole loss from yellow fever may be given as follows:—

Officers	{	1 Lieutenant.
		1 Master.
		2 Assistant-Surgeons.
		1 Assistant-Engineer.
		1 Clerk's Assistant.
Petty Officers . . .	{	1 Ship's Steward.
		1 Gunner's Mate.
		1 Captain of the after-guard.
		1 Blacksmith.
		And 29 seamen, marines, and boys.
Total . . .	39 deaths.	

"On the 28th of October, having cleaned the ship thoroughly, and entered men of colour to act as stokers, we steamed out of Port Royal, with orders to proceed to Bermuda without further delay; and we were fortunate enough not to have a single case, either primary or relapse, after leaving Jamaica, though the sudden change of temperature and climate filled the list with diarrhœa, rheumatic and catarrhal affections, earache, toothache, and cynanche.

"During our stay at Port Royal, the healthy part of the crew occupied the 'Marianne' hulk, while the sick and convalescents were sent to hospital, and the Commodore embraced the opportunity of clearing out and purifying the ship with the help of men of colour,

hired for the purpose. Dr. Kinnear, Deputy Inspector-General, at the same time foreseeing the evil that might result from the spread of the disease on shore, recommended a strict quarantine, precluding also all communication with other ships in harbour. This latter injunction was, however, not strictly carried out; for several of the officers of the 'Icarus' living on board the 'Imaum,' were continually passing from ship to ship while the work of purification was going forward. Moreover, the 'Imaum's' pinnace, with a crew chiefly composed of young lads who had just come out from England, was daily employed pulling the black men to and from the 'Icarus;' and although a strict watch was kept that the boys should not enter the ship, on one occasion they found their way on board, and went below during a shower of rain, and thus began the affliction which proved so disastrous to the 'Imaum.' These boys were the first to fall victims to the disease; and although the zeal of their worthy surgeon, Mr. Thomas Seccombe, was unremitting in immediately removing to hospital every one who showed the slightest premonitory symptoms, until he fell ill himself, it became at last but too evident that persons who had never been on board the 'Icarus' were being daily added to the number, and that a regular epidemic had developed itself on board.

"By the order of the Commodore, 103 men and boys of the 'Imaum's' crew were immediately embarked on board the 'Barracouta,' which had come into harbour at this crisis, with two prizes in tow. Instructions were given her to proceed to the northward without delay; but, as the event proved, she did not escape the disease, for up to her arrival at Bermuda three fatal cases occurred.

"Through the kindness of Dr. Smart, Deputy Inspector-General of Bermuda Hospital, I am enabled to insert the following concise answers to eight queries propounded by him to the surgeon of the 'Barracouta,' on her arrival:—

Questions.

"1. State the dates of arrival at Port Royal, of embarking supernumeraries, and departure from Port Royal.

"2. Health of the ship on arrival at Jamaica.

"3. When did the first case occur?

"4. Was the disease observed earliest among the ship's crew or the supernumeraries?

"5. State the number of cases from among the supernumeraries.

Answers.

1. Anchored at Port Royal on Saturday, 20th October; left the same port on the afternoon of the 24th, on which day 103 supernumeraries were embarked from the 'Imaum.'

2. Was healthy, with the exception of some cases of dysentery.

3. On the forenoon of the 25th, the patient, a first-class boy of the 'Barracouta;' the second case on the same day, and almost at the same time: the patient was an assistant-engineer (supernumerary) from the 'Imaum.'

4. Answered by the third, the seizures being simultaneous.

5. Sixteen cases; of these, seven were supernumeraries, and nine belonged to the ship.

"6. State the number of deaths from among the supernumeraries.

6. Three deaths occurred, viz. one of the crew, and two supernumeraries. The man of the 'Barracouta' had been discharged to the ship from Port Royal Hospital on the 23rd, having been under treatment for syphilis.

"7. State dates of attack and deaths.

7. October 25th, two cases; 26th, two; 27th, two; 29th, four; 30th, four; November 3rd, one; and 4th, one; the last two being slight.

"8. Has the disease decreased or increased in severity?

8. The disease has assumed a much milder type.'

"It is easy to determine the primary source of the fever in the 'Barracouta,' from the whole tenor of the above; but the occurrence of disease at such an early period in a boy belonging to the ship, and not a supernumerary, is remarkable for the apparently short stage of incubation, which could not have exceeded twenty-four hours subsequently to the embarkation of the hands from the 'Imaum.' But with regard to the assistant-engineer (a supernumerary), it must be stated that he had previously spent a whole day on board the 'Icarus,' employed about the engines, and had for some time mingled with the officers of the 'Icarus' on board the 'Imaum.' Moreover, the man of the 'Barracouta' alluded to in Answer 6, before his discharge from hospital, had, of course, been in almost hourly communication with our sick in that institution. These are facts of much importance, and show that infected places and persons are alike dangerous to those who are at all susceptible of this dreadful malady; and in addition it may be said, as borne out by the case of the 'Imaum,' that a disease taken in a certain locality, and spreading from person to person, may finally infect a second locality through their medium. It appears to me to be quite a mistake to think that no individual can communicate the disease to another, unless he himself is actually under its influence at the time, or, secondly, to consider such an individual as differing in any essential particular from an infected locality; indeed, a ship itself is only an individual on a grander scale. A painful idea is well impressed upon my own mind from all I have lately witnessed, that the fatal illness of so many of the officers of the 'Imaum' was first brought about by their mixing so freely with the officers of the 'Icarus;' and this seemed to have been the case in particular with Mr. Albin, the clerk, and Mr. Gowland, clerk's assistant, who were constantly in the presence of our paymaster in the clerk's office of the 'Imaum.' I have often looked upon my own monkey-jacket with horror, as the possible means of communicating so formidable a disease to others.

"With respect to the 'Hydra,' which was also visited by yellow fever at the same time, I have little to say; and that little tends to prove that we have been the source of her infection, notwithstanding the doubts that have arisen on the subject.

"1. When the 'Icarus' arrived at Port Royal, the master of the 'Hydra,' as officer of the guard, boarded us on duty, though he remained but a short time in the ship.

"2. When our sick were sent to hospital, they had frequent intercourse with patients belonging to the 'Hydra,' already in the establishment.

"3. Officers of the 'Hydra' paid numerous visits to the 'Imaum,' and of course, on such occasions, often fell in with those of the 'Icarus.'

"4. A supernumerary assistant-engineer from the 'Imaum' joined the 'Hydra' before she put to sea, bound for Greytown, and up to this period she was free from yellow fever.

"5. The 'Racer,' stationed at Greytown, was not affected, and if my memory serves me correctly, the fever on board the 'Hydra' commenced before she arrived there. It cannot be affirmed, therefore, that the sickly state of the 'Hydra' was altogether independent of the inscrutable morbid conditions originally existing on board the 'Icarus,' though I believe that Mr. Lilburne, the surgeon of the 'Hydra,' entertains a different opinion.

"Contagion and Infection.

"The true signification of the words 'contagion' and 'infection' I find to be very imperfectly understood, even by duly-qualified members of the profession. In fact, there is such a latitude of private opinion as to their import, that they are not unfrequently used as convertible terms, and indeed the desideratum, 'a right interpretation of facts expressed in suitable language,' can never be obtained while such ambiguity exists. The first thing to do, therefore, is to lay down a plain definition of those words, and then we shall be in a better position to see which of either appertain to 'yellow fever.'

"'By infection, is understood,' says Dr. Bennett, 'the power of being propagated through the inhalation of air tainted by the breath or perspiration of the affected person. By contagion is understood communication of disease by actual contact.' When the little arachnid of scabies actually passes from one individual to another by the simple contact of both, we have a plain instance of contagion; but, unless it be some cutaneous affection communicable in a similar way, I very much doubt the existence of any contagious disease at all agreeably to the definition just given, for the whole question of cutaneous absorption stands in the way of the introduction of a poison into the blood. A malady propagated by inoculation would illustrate contagion in an essentially similar sense to the case just mentioned, though the influence exerted on the blood may be more specific and remarkable. This, however, is rather attributable to the properties of the agency than to the means, considered in the abstract. I cannot believe that any one has ever taken yellow fever by simply feeling the pulse of a patient, though it is not at all improbable that he may be contaminated by inhaling the immediate atmosphere, in which case the word infection would be alone applicable. The position that yellow fever is, under 'certain conditions,'

not an infectious malady, can be no warrant for the slightest neglect of precautionary measures to prevent its spread in any case, nor should it at all affect the assiduity of the conscientious physician. It is notorious that nearly all the non-infectionists have had to deal with the disease in airy and well-ventilated institutions, or under circumstances little calculated to unmask this lurking property, which there is good reason to believe is always present, though often held in abeyance by sanitary adjuvants, either accidental or pre-arranged.

"An adder's poison can scarcely be said to augment or multiply itself, for death is evidently consequent upon its wide and mechanical diffusion through the circulation; but the evidence of each augmentation or intrinsic increase, so to speak, in the poison of yellow fever, is, I should think, beyond question; and this indeed appears to be the whole gist of infection, while it precludes the idea of a spontaneous origin, because it betokens vitality.

"It has often occurred to me that chemistry may yet have to deal with the subtle affections of inorganic matter—manifesting conditions at least analogous to those which have been hitherto presumed to be only incident to vital organisms. Such a development of that noble science would be the ally of microscopy in a neighbouring one, which thus makes us conversant with incipient structure, in a region far beyond the pale of natural vision. I must confess, however, that I rather incline to the vital hypothesis, as far as the subject has yet been studied. There is no more proof of the spontaneous development of a monad than an elephant. Thus leading from things tangible to those that can only be revealed to us by microscopic power, we find an argument which is valid in conducting the reasoning faculty to something of greater subtlety, but in which we trace the persistence of the same or similar laws. The doctrine of the spontaneous origin of the yellow-fever organism, or cause, if this premiss be sound, can have no foundation to satisfy the rational mind; and the evidence of the truth or falsity of such reasoning is to be sought in the concurrence or opposition of facts, and common experience, which usually deal with the outward phenomena of an entity, whose intrinsic nature is not properly understood.* But as neither facts nor experience support the contrary opinion, I cannot help holding the view that the cause producing the symptoms of yellow fever in the human system is like the daisy or the buttercup, the scion of a genealogy less violable than that of the oldest family in England.

"Before leaving this subject, I cannot help alluding to the dreadful possibility of the introduction of yellow fever into England, when we might least expect it, through the rapid and consequently frequent communication which we now enjoy with the West India Islands. We have truly no more reason to trust in our own fancied

* "It is only in this way that we can form any judgment of the mind, whose nature is physically beyond our comprehension, though its attributes and powers, to a certain extent, are recognizable even to itself, through its mysterious co-operation with the instruments of its manifestation—the cerebral ganglia, the senses, etc."

security than the people of Monte Video had before yellow fever made its appearance amongst them; and we know that fatal cases have already occurred, as it were, at our own doors—in Plymouth Sound and Southampton Water. In fact, no one has yet determined the geographical limit beyond which the insidious poison cannot develop itself, or be extended.

"It is a remarkable fact, that the deaths from yellow fever at St. Thomas's before it became a coaling depôt for the Royal Mail steamers, as compared with the deaths afterwards, bear the proportion of 4 to 64. And, in connection with this, must also be mentioned an equally important fact, that the combustible and other qualities of coal exposed to the weather, as it is at that island, become much deteriorated. How far this loss may prove to be the pabulum of the yellow-fever virus I cannot tell, but certain it is that in other cases the circumstance is known to be coupled with fever, or some other form of ill-health. The covering and enclosure of coal in tropical climates is therefore, for two good reasons, worthy of the attention of the proper authorities.

"Particulars connected with the Symptoms, Pathology, and Treatment of Yellow Fever.

"1. The tongue, in well-marked cases, generally presents a creamy whitish surface, with red edges and prominent papillæ; but it often exhibits no very remarkable characters beyond a little foulness, and being marked with the impressions of the teeth, though the disease may have a fatal termination.

"When exudation of blood goes on so freely as to coat the mouth and tongue and collect upon the teeth, the tongue is usually much smaller and more pointed than in the earlier stages, and frequently becomes dry and glossy.

"2. The pulse is at first quick, and of considerable strength, though still compressible, and may vary in these respects within certain limits until it becomes feeble; but in those cases which have proved rapidly fatal there has been a marked gradual decrease in its strength; and, finally, when the ferret eye grows clear, and a pallor of countenance shows the mischief of exudation going on within, it is scarcely to be felt.

"3. According to the amount of febrile excitement the skin is hot and dry, as in ordinary fevers, but there is in many cases a turgid fulness of the vessels, and a tingling heat of surface, which is imparted in a remarkable manner to the fingers on feeling the pulse. I am inclined to think that this feverish heat of skin is much more moderate in cases treated in the open air than in those treated in the wards of an hospital, however well ventilated; but diaphoresis is of course favoured in the latter, and this I have observed in some of the convalescents as well as in the primary cases of fever sent to hospital from the ship.

"4. In keeping with an anxious expression of countenance and a bloated cheek, the eye, on the full accession of fever, is much suffused, like that of a person suffering from delirium tremens; this is, how-

ever, much more apparent in sanguineous temperaments, and gradually diminishes as the febrile action subsides, and is altogether absent when the oozing hæmorrhage from the stomach has set in.

"5. It is probable that the greenish-yellow hue of the conjunctiva is commonly due to the presence of bile; but that the lemon-yellow colour of both conjunctiva and skin is owing to the diffusion of the colouring-matter of the blood, which finds its way, first, out of the globules, and secondly, often with great rapidity after death out of the capillaries themselves. The tendency to the formation of extensive ecchymoses in the advanced stage of the complaint is a matter of interest, and probably depends upon the change just alluded to as taking place in the blood; but although they are sometimes very distressing, it would seem as if they answered some important purpose in the elimination of morbid matters: when the blood is recovering itself in convalescents, the yellowness of the skin subsides with a continual desquamation of the cuticle. The development of healthy pus is apparently impossible while the malady retains any power, and well-formed pustules when they occur augur favourably; indeed, pustular eruptions are exceedingly common during convalescence.

"6. The liver is generally pale, or of a dirty yellowish hue, arising from the accumulation of fatty globules in the secreting cells,—a change which is readily revealed by the microscope. The gall-bladder is not usually found in a distended state, though jaundice may be mentioned as one of the sequels of yellow fever. Both liver and kidney exhibit a fatty and congested appearance.

"7. It would seem as though the mucous membrane of the stomach were called upon to compensate for the defective secreting and eliminating power of the kidneys, and in those cases where little or none of the matter of black vomit was found in the stomach after death, the lining membrane presented a thickened appearance, with a muco-sanguineous coating.

"The dark-coloured and nearly pure blood thrown up, in some instances, may be observed on standing to be gradually changed into still darker flocculi floating in a glairy fluid—in fact, to assume the character of black vomit. When these flocculi are examined under the glass, they are found to be composed apparently altogether of altered blood-globules, which first exhibit an irregular shape, owing to endosmosis of the surrounding fluid; secondly, they increase in size; and finally, become blended together.

"To what has been already said with regard to the treatment of yellow fever, I have little to add. My own illness and lack of help and means to a great extent prevented me from putting to the test the numerous measures recommended from time to time by different physicians; but the more I reflect upon the subject, the more I am satisfied that, in the present state of our knowledge, we can only be guided by the common principles of medicine, for it is plain that a specific mode of cure cannot be suggested until the nature of the specific cause is known. We observe also that the disease manifests itself with various degrees of intensity in different cases, and how much of any happy recovery depends upon the stamina of the system.

or upon the means employed, is above all things difficult to determine, —a fact which should never be forgotten by those who may be zealously inclined to advocate their own suggestions,

"The most distressing symptom in yellow fever, both to the patient and to the medical attendant, is irritability of stomach; it is so constantly present, and so often uncontrollable, that the knowledge of every available means of checking it is of the greatest importance.

"I have several times proved that four or five minims of chloroform prepares the stomach for the reception and retention of food, by lessening its irritability; but the dose should be repeated a short time before food is again taken, as the effect of the chloroform is transitory.

"Lime-water I have also found to have a most beneficial effect in allaying vomiting, and thus enabling the patient to partake of food. The essence of beef is well adapted for such cases.

"The acid. sulph. dil. may be used with advantage as a tonic and styptic, to suppress hæmorrhage oozing from the stomach.

"Turpentine enemata may be recommended with confidence in this disease.

"The severe pain in the loins, which is a constant symptom in yellow fever, is in all probability much, though it cannot be altogether, due to renal congestion, which I believe also to be a constant attendant in that disease. It is certain, however, that I have found sinapisms and stimulating liniments to afford great relief to the lumbar pain. Are diuretics contra-indicated? perhaps not so much so as in true nephritis.

"A dose of calomel exceeding ten grains always appeared to me to be purely experimental, and rather based on empirical views than upon a sound physiology. My late friend Dr. Bagot, Military Assistant-Surgeon of the black troops at Corosal, usually prescribed large doses of this medicine, as also of quinine, in yellow fever; and ratifying his faith in the mode of treatment, when the unhappy moment came that he must be his own physician, during a short and finally fatal illness, he took something like 150 grains of calomel and an equally large proportion of quinine.

"The ill-effects of quinine in checking secretion, and deranging the circulation within the head, I have frequently noticed, and I think it highly probable that, in yellow fever at least, its employment is more suitable to the convalescent than to the patient immediately under the influence of the disease; it is perhaps more useful in such febrile states as exhibit a periodicity in their recurrence. I have always, however, preferred the frequent repetition of small doses to the neck-or-nothing suggestions of some writers; so that a prejudicial effect, should such occur, may be observed in good time, and the medicine simply omitted without doing much harm. This is a good therapeutic principle in general, and is very succinctly laid down by Martin, who highly deprecates the indiscriminate use of quinine, because of its so-called specific action.

"The poison is evidently an intoxicating one, and a marked difference is to be drawn between the wild and irritable delirium pro-

duced by it when thrown out in contact with the brain substance, and the comatose state brought about by those principles which accumulate in the circulation in consequence of the ineffective action of the kidneys and liver. When the semi-comatose patient is aroused, he may be made to answer rationally; but in the delirium which is characterized by vigilance and irritability this can scarcely be expected, and even a coherent reply may be something in league, as it were, with the mental derangement. Morphia certainly has the effect of allaying this excitable state and procuring sleep, though it would be positively injurious where a tendency to coma exists.

"I should like to have had the opportunity of trying the use of ice internally, and of placing the patient in a refrigerating chamber, the essence of beef being at the same time freely supplied; for there is great reason to believe that, if the tendency to death could be obviated until the system had time as it were to rally, many more cases might be saved.

(Signed) "JOHN DENIS MACDONALD, F.R.S.,
"Surgeon."

The surgeon of the 'Imaum' is of opinion that the disease was communicated from the 'Icarus,' and that in the 'Imaum' (the stationary receiving-ship at Port Royal), there was no local poisonous agency of sufficient power to produce yellow fever. He says:—

"The late epidemic has given us positive information on the following points; namely, that this form of yellow fever is communicable, and spreads by the known laws of infection; that the varieties of dark-coloured fluid thrown off the stomach, and commonly spoken of as black vomit, are composed of blood in various states of decomposition; that suppression of urine may not necessarily be present in yellow fever, or indeed any very marked diminution in the quantity secreted; that the peculiar delirium frequently present does not always, or even generally, proceed from poisoning by urea."

The fever appeared on board the 'Barracouta,' which was immediately ordered to Halifax, but from stress of weather was compelled to make for England. The surgeon reports:—

"Six deaths occurred out of the twenty-one cases of yellow fever. I attribute the comparatively small number of deaths to the rapidity with which we changed our climate, which mitigated the intensity of the symptoms,—some of the cases, after we left Bermuda, being slight and of short duration; but most of those that occurred before reaching the island, and whilst there, were very grave indeed.

"My experience is not sufficient to warrant me in expressing an opinion as to the possibility of its spontaneous production, or that intermittent or remittent fevers ever become yellow fever. Many medical men in Jamaica with whom I have conversed on the subject, assured me that they had seen cases of what is known as Greytown fever degenerate into yellow fever. That it is contagious admits of but little doubt, and that little is confined to the statement that it is never seen inland, but always confined to the coast and banks of great rivers. Could this be well established, I think it would tend

perfect ventilation can be maintained, should not be less than 1500 cubic feet per man in fever wards.

After alluding to the terrible mortality from this fever in several ships of the West India squadron in 1861, during their voyage to Halifax, and after their arrival there, Dr. Smart remarked:—"I must confess that such results, placed side by side with those of immediate removal of men from infected localities, as exhibited in Bermuda experience, have raised a doubt in my mind whether equal losses of life would have been incurred by the immediate removal of the crews from their ships into some suitable quarantine establishment in the West Indies."

Drs. Bryson, Camps, Stratton, R.N., and Milroy, and Mr. Marson, took part in the discussion of this very elaborate and valuable paper, which had been communicated to the society by the courtesy of Sir John Liddell, Director-General of the Medical Department of the Navy.—*Proc. Epidemiological Soc., March, 1863.*

ART. XLV.—*Observations on the Endemic Diseases of British Honduras.*

By J. B. HAMILTON, A.B., M.D.,

Staff Assistant-Surgeon.

This paper is the result of personal experience, and contains some interesting observations. Dr. Hamilton divides the diseases into medical and surgical; the former being, for the most part, the result of miasmata, and the latter of the reptile and insect pests of the country. As a proof of the importance of the former, he states that out of 283 admissions into the Military Hospital, no less than 139 were for fever of a remittent or intermittent type; and that of the deaths, 6 in number, 4 were the result of fever.

It is mentioned as a curious fact, in connection with this malarious influence, that yellow fever is extremely rare; though hardly a year passes without an epidemic on the same coast, either to the north or south, and frequently both, within a few hundred miles.

In respect of the causes of these miasmatic fevers, it may be laid down as a rule, that they are always, to a certain extent, epidemic as well as endemic. The "fever season" is generally about the months of August, September, and October, beginning when the rains cease and the drying up of the swampy ground commences. Another great cause of the occurrence of these fevers in autumn is, the prevalence of the *land-winds*, which, blowing from a north-westerly direction, sweep the miasmata from the swamp right into the town and barracks. This land-wind at eight a.m. is often bitterly cold, with the thermometer at 60°; then about half-past ten a.m. the wind falls, the day is almost calm, the average heat in the shade 91° to 93°, without a breath of air to temper the burning heat of the sun, which constantly, during three months, is as high as 130°.

This great alternation between heat and cold is most prejudicial to the European constitution, and predisposes the body to the influence of the malaria. Few Europeans escape an attack; indeed, during the autumn of 1862, every white person suffered, and the admissions among the black troops rose two or three hundred per cent., nearly all the cases being fever of an intermittent type.

There is often difficulty in designating the exact type of fever. A peculiarity often observable is the total absence of the cold stage, or else it will be so short as hardly to be recognized. Among other variations, one of the commonest is the absence of perspiration, or, in fact, a want of the third stage. When this occurs, there is often great enlargement of the spleen—in some instances so large as to fill up almost the entire abdomen, often accompanied with anasarca.

A not uncommon form of fever goes by the descriptive name of the *broken-bone fever*, so called from the patient having the unpleasant sensation of feeling as if all the shafts of the long bones were being gradually broken across. The other symptoms are generally of a remittent type, though sometimes it occurs in distinct cases of intermittent.

Dr. Hamilton touches briefly on the general treatment of these malarious fevers. After freely unloading the intestinal canal by a dose of sulph. of magnesia or by a mercurial purge, when the stomach is irritable, he gives quinine in doses from 5 to 10 grains, with drachm doses of the sulph. of magnesia, to be continued as the state of the bowels indicate. If the irritability of stomach continues, the simplest and most pleasant remedy is very acid lemonade. Should there be much tendency to insomnia, a full dose of opium combined with hyoscyamus, at bedtime, will have the desired effect; an opiate in the outset of a paroxysm often cuts short the cold stage and induces perspiration. In these malarious fevers there is great tolerance of quinine, and it would appear that the more virulent the miasm the greater is the tolerance: the author gave, in one case, 450 grains in ten days without affecting the hearing of the patient.

Dr. Hamilton next notices the empirical treatment adopted by the Spaniards in yellow fever. It is simply a mixture, containing about an ounce of castor oil, half an ounce of lime- or lemon-juice, and half an ounce of common salt for each dose. He is satisfied, from inquiries made by himself at Corosal, that it did effect cures even in cases where black vomit had set in, and when the patient had been given over after the usual treatment of calomel and quinine.

In Honduras, exanthemata are rare; but when an epidemic does break out, it rages with fearful violence among the black population, who seem to succumb to disease much more readily than Europeans.

Of the surgical diseases, by far the most important are snake-bites, which are of frequent occurrence. The poisonous snakes are the rattlesnake, the tomagoff, and the coral, or barber's pole. The tomagoff, or tamagass, is by far the most frequent cause of death, as its general place of abode is among piles of dead leaves, where it lies coiled up, and is therefore liable to be trod on. Its bite is very fatal, death having been known to take place in 20 minutes; but,

previous year. The improvement is attributed to several causes—a healthier season, better selections, fewer children, improved hold ventilation, better diet and clothing on the voyage, and two other circumstances, namely, the use of Dr. Normandy's water-distilling apparatus, and the employment of more experienced surgeons—Australian emigration surgeons. This was the first season in which these last two improvements have been tried to any extent, and the results are so marked as to justify the conclusion that they have contributed in no small degree to the greater healthiness of the ships. In the ships carrying neither Australian surgeons nor the distilling apparatus the death-rate was 7·07 per cent.; in 4 ships not carrying these surgeons, but having the distilling apparatus, it was but 5·60; in the 13 remaining ships, which carried these surgeons, but in 3 of which there was no distilling apparatus, the percentage was only 3·36. The proportion of females has been but 27 per cent. this season, and as female emigration, however desirable, entails the necessity of sending young children, and often aged relatives, the reduction in the proportion of women may have had its influence in lessening the mortality. The Jamaica immigration contrasted very unfavourably with that of the other colonies; the death-rate was 8·95 per cent. This may in some degree be attributed to changes in the Agency, preventing the accumulation of experience; and also to the instructions given to the agent; for the Jamaica Government, in signifying its acceptance of the plan for employing Australian surgeons, expressed a wish that the least expensive should be engaged, and, added the executive committee, only when other medical men who have satisfactorily attended Coolies to the West Indies cannot be procured.

PART IV.

WESTERN AFRICA, ST. HELENA, CAPE OF
GOOD HOPE, MAURITIUS, AND CEYLON.ART. XLVIII.—*On the Health of the Troops serving in
Western Africa.*

AMONG the white non-commissioned officers serving in the Command, averaging five or six in number, one death occurred, that of a sergeant-major of the Gold Coast Artillery, by dysentery.

The average strength, admissions into hospital, and deaths of the black troops at Sierra Leone, the Gambia, and the Gold Coast respectively, are shown in the following Table :—

	Average Strength	Admis- sions into Hospital.	Deaths.	Ratio per 1000 of strength.		1859-60.—Ratio per 1000.	
				Admitted.	Died.	Admitted.	Died.
Sierra Leone	370	375	15	1013·6	40·53	579·6	24·48
The Gambia	481	470	20	1090·4	46·40	831·3	30·13
The Gold Coast	305	222	13	727·3	42·64	657·1	16·89

This Table shows the sickness and mortality in all three Commands to have been considerably above the average of the two preceding years. At Sierra Leone and the Gambia this may have been to a considerable extent due to the circumstance that a portion of the force was twice employed on active service during the year. In the first quarter, they formed part of an expedition sent up the river Gambia against the Mandingoes, and in the end of November they again took the field against the King and Chiefs of Quiat, a tract of country recently ceded to the British Government.

Only three soldiers were killed by the enemy in these expeditions, but the fatigue and exposure of the men doubtless contributed much to the increase of sickness and mortality by disease.

Paroxysmal Fevers were thrice as prevalent at Sierra Leone and the Gambia as during the two preceding years,—a result which

might have been anticipated from the exposure of the troops while on field service. The same circumstance may account for the increased proportion of cases of dysentery and diarrhoea.

Enthetic Diseases.—The admissions on account of venereal have more than doubled during the past year at Sierra Leone, but have been less numerous than formerly at the other stations. The medical officers do not state any probable cause for this change.

Parasitic Diseases.—Guinea-worm continues to hold a prominent place in the returns from the Gold Coast, having been the cause of upwards of one-third of the whole of the admissions into Hospital. There were no cases of it at Sierra Leone or the Gambia.

Sanitary Suggestion.

Adverting to the condition of the European officers serving on the coast, and to the forts in which they are quartered being so low (on the very margin of the sea) and damp, the principal medical officer puts the question—"Is it to be wondered at that they are so sickly and so frequently invalided to either Madeira or England?" and it is again suggested that the great sickness and mortality among them might, in a very great degree, be diminished by erecting, on any part of the surrounding hills, a sanitarium for their benefit.

ART. XLIX.—*Health of the Navy on the West Coast of Africa Station.*

The protective squadron on the West Coast of Africa consisted of twenty-one vessels, with a mean force of "all ranks and ratings" of about 1880 men. The number of cases of disease and injury placed on the sick-books amounted to 3289, of which 73 were invalided, and 40 terminated in death. The total loss of service from disease and injury was least of all in the 'Spitfire,' 'Triton,' 'Sharpshooter,' 'Torch,' and 'Buffalo.' The undoubtedly healthy condition of the first two, not only during the present, but during the past year, appears to have been owing principally to the care and attention bestowed on their crews whenever they were exposed to any of the common exciting causes of disease; for they not only took a fair share in all the ordinary duties of the station, but they occasionally entered rivers, and sent boats away on detached service, to cruise for slavers. On all these occasions, however, quinine appears to have been invariably given, according to the rules laid down for its use as a prophylactic.

The total daily number inefficient from all causes was about equal to 63·5 per 1000. But even on this unhealthy station nearly one-half the total loss of service was consequent on wounds, injuries, boils, and ulcers.

Thirty-two deaths occurred from disease, and 8 from injury and

drowning, making together 40, of which it is not a little singular that a third were Kroomen; the mortality amongst the blacks being in the proportion of 66·6, and of the Europeans 17·7 per 1000 of mean force respectively. The excess amongst the former is principally to be ascribed to inflammatory affections of the respiratory organs.

The total number invalided was 73; namely, 64 for disease, and 9 for wounds and injuries; the former being in the ratio of 35·2, and the latter of 4·9 per 1000 of mean force,—a decrease of more than one-half on the loss by invaliding on the previous year.

Of *continued and remittent fever* there were 473 cases, with 6 deaths. Of *yellow fever* only 3 cases, all of which proved fatal.

The following extracts illustrate the benefits of quinine as a prophylactic:—

In the 'Archer,' which was employed principally on the southern division of the station, there were thirty-seven cases of primary fever, eighteen of which appear to have been contracted at Fernando Po, in May, when the vessel was hauled close to the land for a few days, for the purpose of taking in a supply of coals. One of these terminated in death. This vessel remained for thirteen days, in June, in the Old Calabar river, and for several days she was anchored during the heavy rains at the mouth of the Cameroon river; but on both occasions quinine was given to the crew, and no fever followed.

In the 'Alecto,' which arrived at Sierra Leone from England on the 27th of March, there were thirty cases of primary fever. Eighteen of these appear to have been contracted at the above anchorage, where some of the men were exposed in one of the boats to the mid-day sun, whilst employed bringing off provisions; the fever was distinctly remittent, and in some cases terminated in intermittent: they all recovered. Again, on the 17th day of June, five officers landed at Badagry, in the Bight of Benin, to attend the funeral of the British Consul at Lagos; but, as frequently happens, the surf suddenly rose, so that they were unable to return to the ship for two days. "It rained nearly the whole time they were on shore. On the morning of the 19th they re-crossed the Victoria Lagoon, which intervenes between the town and sea-beach, and succeeded in reaching the vessel. The stench of decayed vegetable matter was most offensive on the lagoon."* During the time they were on shore, and for ten days after they returned on board, quinine was given night and morning, yet four of the number were simultaneously attacked with fever on the 2nd of July, three days after they had ceased taking quinine; the fever, however, was very slight, lasting from four to eight days. Had the quinine been continued for a few days longer, so as to cover the entire incubative period, it is extremely probable the evolution of the fever would have been prevented.

In the 'Bloodhound,' which had just arrived on the station, fifty-two cases occurred between the 1st of October and the 31st of

* The effluvia arising from these waters is noticed at p. 17 of the 'Report on the Climate and Diseases of the African Station.'

December. The surgeon mentions that "on the 16th of November we entered the Brass river, and on the 19th the Niger, returning to the open sea on the 30th. While in the rivers every precaution was adopted to avert disease; quinine in rum was administered every morning, and the awnings were kept spread day and night." The lower deck had been previously whitewashed, and none but distilled water was used for drinking or cooking. "The character of this fever was of a low typhoid form, exacerbations occurring generally between 3 and 5 A.M., and frequently they were accompanied by severe abdominal symptoms, a furred tongue, with the centre and edges of a bright red; pain in the epigastrium, increased by pressure; diarrhoea, and frequently vomiting, followed by great prostration." It is, however, pretty evident that a large proportion of these cases could not have been very severe, as the total number of days' sickness was only 297, so that on an average the patients were not more than six days under treatment.

There were only eleven cases of fever in the 'Buffalo' during the entire year. Nine of these were supposed to have been contracted between the 4th and 10th of May, while the vessel lay on the beach at Fernando Po. One ounce of quinine-wine was given to each white man while the vessel remained on the beach, and for four days only afterwards; it is therefore by no means surprising that the quinine failed in the desired effect.

One of the most healthy vessels in the 'squadron was the 'Pluto,' which, after completing upwards of three years' service on the coast, returned to England in April. By referring to Table No. 6, it will be seen that only one case of primary fever, and that of an ephemeral character, was entered on the sick list during the year. But the most remarkable fact connected with this vessel is, that from Midsummer, 1857, up to the present year, though actively employed on all parts of the coast, only fifteen cases of fever were placed on her sick-books during the whole time. It appears that the executive officers took care never to expose the men unnecessarily to climatic agencies adverse to health; but when this could not be avoided, quinine-wine was invariably administered to them by the assistant-surgeon. The holds and bilges were kept clean, and the clothes and bedding of the crew were frequently aired. It is therefore but just to ascribe the healthy condition of this vessel to the praiseworthy conduct of her officers.

In the statistical report for the preceding year, it is mentioned that the 'Spitfire' and 'Triton,' though employed actively in the general duties of the station, were remarkably healthy, and this character they maintained throughout the present year, owing, there is reason to believe, to the constant attention paid both by the executive and medical officers to the preservation of the health of the men; for although they entered several of the most unhealthy rivers, and were exposed occasionally on boat expeditions, they almost entirely escaped fever.

In the 'Torch,' which left the station to return to England early in the year, and in the 'Wrangler' and 'Viper,' which arrived during the last quarter, there were a few slight cases. It may there-

fore be assumed that these details fully bear out the opinion elsewhere expressed, namely, that "if it were possible the duties of the station could be performed by the cruisers without approaching, at any time, within a few miles of the coast, it is highly probable the mortality of the squadron would be reduced to an equality with that on the East and West India Stations."* In fact, by avoiding personal communication with the land and with places or ships where yellow fever exists, it is probable the death-rate from fever would seldom exceed that on the Mediterranean Station.

ART. L.—*Climate of Western Africa.*

"A never-failing supply of the purest water, and, in a word, every comfort of life, can be procured at Sierra Leone and the Gambia at a moderate expense. Persons living in those colonies can, moreover, enjoy the healthful and agreeable exercise of riding or driving over well-kept roads and bridges, the scenery in the former colony being most beautiful. The horses are small, but spirited, fleet, and finely formed, having a dash of Arab blood in them.

"With regard to the climate, it has been too long the fashion to abuse and condemn it without inquiry; and the medical profession, like the general public, have accepted and indorsed its unhealthiness as an established fact. But, in reality, the climate of West Africa will bear comparison with most of our East or West Indian colonies, where endemic, with epidemic fevers, and cholera to boot, prevail quite as frequently and fatally. In truth, health is to a certain extent in the hands of Europeans themselves, and the monotony so loudly complained of may be effectually overcome by employment and recreation, while moderate living (including good wine and beer), regular exercise, early rising, and retiring early to rest, sleeping in well-ventilated rooms, the bath, and a careful guarding of the skin from chills, will enable them to live almost as safely, and quite as comfortably, in West Africa as in England. It should no longer be concealed, that half at least of the deaths and incapacities, unfairly ascribed to the climate, are the result of errors of personal economy and intemperance. Deaths from accidents serve to swell the mortality lists, which are also greatly increased by men broken in health and fortune seeking a livelihood in the colonies there, and by young men, or rather boys, being sent out as clerks, etc., before their constitutions are fitted to cope with the climate. In the former case, these persons are too poor to get the comforts so necessary to support life in a tropical climate; while the latter are assailed by temptations few of them know how to withstand.

"Popular opinion has exaggerated the effects of the climate with which it has nothing to do. If Europeans will eat and drink to an extent which would be ruinous in England, the climate is straight-

* Report on Climate and Diseases of the African Station, p. 212.

way denounced. Its effects must of course depend, to some extent, upon the temperament and idiosyncrasy of individuals; but if stimulants are too often drunk, while sitting up night after night at the card-table is indulged in and often prolonged to daybreak, health must be impaired and ultimately destroyed.

"In the treatment of the paroxysmal fevers of the coast, the mercurial system has long since been discarded for the more rational method of giving quinine, either alone or in combination, at their commencement, cinchonism being induced as rapidly as possible; treatment which has effected a great saving of European life.

"With regard to the classes best adapted to resist the climatorial influence of West Africa, the negro race undoubtedly holds the first rank; and if its population consisted of negroes alone, yellow fever would altogether disappear. Nevertheless, it is questionable whether persons of mixed blood are better able to bear up against its effects than persons of pure European blood, provided the latter are sober in their habits. There can be no doubt that Europeans, upon their first arrival in West Africa, are in greater danger of losing their lives than the former; but when once they have become acclimated, they seem generally to withstand the influence of the climate better than the coloured people—provided, I repeat, they are temperate in their habits."—*Dr. Clarke, Trans. Ethnolog. Soc.* 1863.

ART. LI.—*The Cameroon Mountains as a Sanitarium.*

In a letter to the 'Times' on the transportation question, Captain R. F. Burton writes as follows:—

"As far back as 1856, the late Mr. M'Gregor Laird, one of Africa's best and noblest friends, wrote as follows concerning the Cameroon Mountains and Amboise Bay, in West Africa:—

"The great value of this position to this country is undoubtedly its extraordinary adaptation for a penal settlement. Supposing, by black labour, a good road made to the superior level from the port, European prisoners might be kept there in perfect security; any attempt to escape would be defeated by the climate. They would displace no native population, for that is confined to the low ground. They would be completely isolated, and governed with greater ease than convict stations surrounded by white settlers. Employment could be found to any extent in cutting timber, making roads, and raising their own provisions. As long as they remained on the high land they would be safe; the penalty for leaving it would be levied by nature herself. Ground could be allotted to the well-behaved, and the great source of depravity would be removed by allowing intermarriage with the native women. A mixed race would be the result, which experience has proved to be the most efficient way of improving mankind. As long as transportation continues, and the difficulty of finding a practical substitute for it is generally acknowledged, there is no part of the world where a convict can be placed

with less injury to his fellow-creatures and with greater chance of reformation for himself.'

"I can confirm, from personal experience, every word above cited. In those days, however, little was known of the capabilities of a mountain region which has lately been explored, and upon which I spent my Christmas holidays last year.

"The Cameroons Mountain, rising in the depths of the Bight of Biafra, and within 4°25 degrees, or about 300 miles, of the Equator, is not, as has been supposed, an isolated mass breaking the continuity of the level and mangrove-growing coast. I believe it to be the abutment of a great *sierra*, which, connected by the 'Rumbi' and 'Qua' hills,—they are visible to the naked eye from the sea,—extends in a north-easterly direction to Mount Alantika, known to Europe by Dr. Barth's travels. The Cameroons buttress may contain 500 square miles of successive bush and jungle, wood and forest, grass and barren ground. If connected, however, with Alantika, the number might be multiplied by fifty.

"The first work to be expected from convicts located at Amboise Bay, at the foot of the Cameroons, would be a sanitarium. This poisonous coast calls aloud for some such establishment. During the last year her Majesty's ship *Prometheus*, Captain Bedingfield, stationed at Lagos, lost by death and invaliding 84 out of 100 whites. In the Bonny river it is calculated that, of 280, some 134 died in 78 days. One ship, the '*Osprey*,' lost all her crew of 17 men except the master. The disease was yellow fever, which still continues in the New Calabar river, while in the Bonny it has been succeeded by a no less deadly typhus. At Fernando Po, 76 men died in two months, out of a total of 231 whites. I therefore conclude that we *do* want a sanitarium. It is vain to assert that a change to England is sufficient. Returning by the African steamship *Athenian*, Captain Lowry, I remarked that, despite the care of our excellent doctor, every passenger from the coast fell ill; one officer, who never had had fever in Africa, suffered from it on board. The first establishment at Amboise Bay would be on Mondori Island, an oval rock some 200 feet high at the entrance of the bay, and catching the pure Atlantic breezes, which at Clarence Town, Fernando Po, must pass over a long tract of jungly swamp backing the settlement. The second station—it is unwise to transport fever patients suddenly from low ground to high altitudes—would be on Mount Henry, an eminence about 150 miles from the mission station on the beach, and upwards of 1500 feet above sea-level. The third would be a ledge of ground, grass-grown, but not wholly out of the wooded region, 7000 feet high, and sheltered from the north-east wind by a formation which my companions and I called the 'Black Crater.' A stream of degraded lava leads to this, the highest point where European invalids might be settled, and cutting and zigzagging would easily render it practicable for four-footed animals. Above the Black Crater all is grass and clover, lava and clinker. In places the land is level enough for pleasant riding; snow could be stored for the whole year; and those who enjoy cold can pass a night or two at 'Saker's Camp,' where at dawn the mercury stands below zero, the blankets are stiff, and the noble peak is hoar with frost.

"Being unprepared to assert in England that felony would justify divorce, and not unacquainted with the horrors of Norfolk Island, I agree with Mr. Laird in thinking it no small advantage that the convicts who prove themselves orderly and industrious should be able to intermarry with the women of the country.

"With respect to the chances of escape, a bottle of rum given to the natives would bring in any fugitive; and as the lowlands are deadly, as the highlands are healthy, as all the craft upon this coast is so frail that even the half-amphibious negroes often lose their lives, and finally, as the mountain, though thinly populated and wholly desert above an altitude of 3000 feet, is almost surrounded by populous regions, full of well-armed men, commanded by 'General Tazo,' *alias* swamp fever, it is not to be expected that a convict station in Western Africa will ever breed a race of bushrangers.

"In support of my statement regarding the eligibility of Cameroons Mountain for a sanitarium, a colony, or a penal settlement, and the perfect adaptation of Amboise Bay as a naval station, I can cite, besides Mr. Laird, General Sir Edward Nicholls, K.C.B., and Captains William Allen and Close, R.N., all personal and competent observers. Against it is the editor of a *quasi* missionary paper, who 'protests' that 'we have done evil enough in Africa already,' and who should discover, by reading up a little colonial history, that stationing convicts makes a place. To the morbid few who would cry, 'Cruel to transport the poor garotters to such a climate,' I may reply that the coast is good enough, if an occasional ticket-of-leave be allowed, for myself and others who are not convicts."

In a second letter to the same journal, Captain Burton remarks,—
 "As a sanitarium, then, I would recommend the Cameroons Mountain to your notice. It is indeed hard that the white man should die in the 'pest-houses' of the coast within cannon-shot of a healthy region; that he should be parched with fever within sight of frost and snow. As yellow-fever level is, on an average, below 500 feet above sea-level, ague and fever below 2500, and tropical diseases generally below 7000, and as such sites are profusely scattered over Asia, Africa, and America, there is no reason why the European should be less long-lived out of than in Europe."

ART. LII.—*On the Health of the Troops serving in the Island of St. Helena.*

The average strength of the troops was 680, the admissions into hospital were 705, and the deaths 8, of which 1 occurred out of hospital. The sickness, therefore, was in the ratio of 1037 and the mortality of 11·76 per 1000 of the strength; the former being considerably above, and the latter almost identical with, the average of the two preceding years.

The only noteworthy circumstance is under the head of Dietic Diseases. The only disease in this class which has caused any ad-

mission during the year, has been intemperance (*ebrietas*), of which fifty-one cases were reported. The death under this head was that of a private of the St. Helena Regiment who, while on sentry, drank off a bottle of rum at a draught. With reference to the great amount of intemperance, the surgeon of the St. Helena Regiment observes that "few bodies of men environed by a network of wine shops, and subject at occasional intervals to visits of men-of-war, whose sailors come on shore by hundreds to spend, within a few days, sums of almost incredible amount, and which they share with the soldier, could be expected to behave better."

ART. LIII.—*On the Health of the Troops serving at the Cape of Good Hope.*

Sickness and Mortality.

The average strength of the troops during the year was 4598; the admissions into hospital amounted to 3974, the deaths to 32 in, and 12 out of hospital, and 2 invalids died, one on the passage home and the other immediately after landing at Portsmouth. These numbers give a ratio of 864 admissions, and 10 deaths per 1000 of the mean strength.

On the Extent of Invaliding.

During the year there were 70 men sent home from the Cape recommended to be discharged as invalids, and 61 for change of climate, being in the annual ratio of 15·2 and 13·3 per 1000 of the mean strength.

Diseases of the circulatory and nervous systems, rheumatism, and ophthalmia, have been the chief causes of disability among the invalids. The first two of these classes are, it is to be feared, in a great measure the result of the intemperate habits of the men. Inspector-General Taylor, C.B., the principal medical officer, quotes the following extract from a report made in 1838 by the late Deputy Inspector-General Dr. Nicholson upon the prevalence of disease of the heart among the troops at the Cape:—"It would be difficult to account in any satisfactory manner why diseases of this nature should affect soldiers here more frequently than at other stations, their habits in all situations being so nearly alike, and in this climate there is nothing peculiar which can be supposed to favour their production. I believe that here and elsewhere we must look on intemperance as among the chief causes of the disease under consideration, by keeping up an excitement of the circulation aggravated by high atmospheric temperature; long-continued gastric derangement, induced by the same cause, acting remotely on the heart and ultimately terminating in organic lesion, may also be set down as a probable cause. As rheumatic affections, too, are in this climate so very prevalent and marked by such peculiar severity,

may it not be supposed that many of the complaints of the heart have their origin in that disease by the translation of the morbid action?"

Adverting to the diseases during the year, Mr. Taylor represents ophthalmia as being the only one that could be called specially prevalent among the troops. Various causes for this condition were assigned by medical officers, but he was inclined to consider the affection (an extensively chronic one) to be of a land-scorbutic nature, partly due to high temperature, and partly to the absence of a sufficient quantity and variety of vegetables and fruits of a fresh and succulent nature.*

ART. LIV.—*Health of the Navy on the Cape of Good Hope Station.*

Eight vessels were employed on the Cape of Good Hope Station in the year 1860, with a mean force of 1570 men. There were 2199 cases of disease and injury, of which 53 were invalided and 18 terminated in death; the former being in the ratio of 33·8, and the latter of 11·4 per 1000 of mean strength, which in a small degree exceeds the ratios of the preceding year. With the exception of the 'Wasp,' the daily loss of service from disease and injury in the respective vessels was extremely small, ranging from 20·0 to 44·5 per 1000 men. In the 'Wasp,' however, it amounted to 82·5 per 1000, owing to an eruption of diarrhoea which took place at Port Louis, in the Mauritius.

The aggregate number daily sick amounted to 82, or in the ratio of 52·5 to the 1000 of force, which exceeds the ratio of the preceding year.

The total number of deaths were,—from disease, 10; from injury and drowning, 8: the former being in the ratio of 6·3, and the latter of 5·1 per 1000 of mean force.

45 men were invalided for disease, and 8 for wounds, injuries, and hernia; making the total loss under this head 53, or in the ratio of 33·8 per 1000.

This is one of the healthiest commands in the Navy: it is even remarkably exempt from venereal disease, for we find it stated that, "the proportional amount of venereal disease, compared with that occurring in other sections of the naval service employed in more civilized regions of the globe, is extremely low, namely, 17·2 per 1000; in fact, it would appear that this disease is generally far

* The scarcity and dearth of vegetables at many of the frontier stations induced Mr. Taylor to propose to the military authorities that their provisions should be obtained by a commissariat contract, and his recommendation was urged for favourable consideration by the home authorities, who have decided upon rations of preserved vegetables being supplied to the troops at those posts, according to necessities.

more prevalent amongst people who assume to themselves a high position for moral and intellectual refinement, than it is amongst the rude, uncivilized aborigines on the East and West Coasts of Africa."

Under the head of *Wounds, etc.*, it is recorded that one man died of exhaustion, consequent on the excessive heat and stifling atmosphere of the stoke-hold; he suddenly became insensible, and when carried on deck it was found he was unable to swallow; "his face was pale, his pupils contracted and insensible to light; the conjunctivæ were not injected; his eyelids were closed, and the head cool, but the rest of the surface hot and dry; respiration deep and laboured, but not stertorous; there were mucous rales in the chest and throat; the pulse, frequent, small, and feeble, soon became irregular, intermittent, and fluttering. He made no attempt to move his limbs or body, but gradually sank, and died two hours and forty-five minutes after the attack. The temperature of the external air at the time was 81°, but in the stoke-hold it ranged between 108° and 117°. No *post-mortem* examination took place."

ART. LV.—*On the Health of the Troops serving in the Island of Mauritius.*

Sickness and Mortality.

The average strength of the troops serving in the Mauritius throughout the year was 1921; there were 1168 admissions into hospital among them, and 23 deaths, of which 5 were out of hospital. No deaths occurred among the invalids. These numbers give the proportion of 608 admissions, and 11·97 deaths per 1000 of the strength, being little more than half the average of the two preceding years.

The decrease in the prevalence of miasmatic diseases has been most marked in the group consisting of dysentery, diarrhœa, and cholera, in continued fevers, and in paroxysmal fevers. The mortality by the first of these groups would also have been greatly reduced but for an outbreak of epidemic cholera in the month of December. In the beginning of December this disease appeared among the civil population of Grand River, a village two or three miles from Port Louis. On the 8th, a cholera hospital was opened there, and between that date and the 27th there were 40 cases admitted, of which 24 died. On the 9th of December, a detachment of the 2nd Battalion 5th Regiment was sent from Port Louis to the rifle camp at Petite Rivière, a mile distant from Grand River. On the 22nd, a case of spasmodic cholera occurred in this detachment; on the 23rd, another case occurred; on the 24th, two cases; and on the 25th, one. Of these five cases, four died. No more cases presented themselves before the end of the year, although diarrhœa was very prevalent in the detachment. The further history of the epidemic must be given in the Report for 1862.

The medical officers are disposed to attribute the diminished amount of sickness among the troops to the influence of two hurricanes in the early part of the year. The fall of rain in February, when these occurred, amounted to 46·57 inches, the total fall during the year being 66·60 inches.

On the Extent of Invaliding.

Only two men were sent home for change of climate; one on account of chronic rheumatism, and the other of palpitation of the heart. None were sent recommended for discharge.

Eight invalids from the Mauritius were finally discharged the service during the year, being in the ratio of 4·2 per 1000 of the strength.

ART. LVI.—*On the Health of the Troops serving in the Island of Ceylon.*

Sickness and Mortality.

I. WHITE TROOPS.

The average strength of the European troops was 907 men, among whom 1305 admissions into hospital took place, and 15 deaths, of which 2 were out of hospital. In addition to these, 3 invalids died on the passage home or at the Invalid Dépôt, making a total of 18 deaths. The ratio of admissions, therefore, was 1440, and of deaths 19·85 per 1000 of mean strength, being considerably under the proportion in 1860.

It is stated that in the middle of March, several cases of spasmodic cholera occurred among the white troops in Colombo, three of which terminated fatally. The outbreak was attributed to the effluvia from the canal in the fort, which is little better than an open sewer, and was at that time very low from long-continued drought. The men occupying the barrack immediately over the canal were removed. Heavy rains set in shortly afterwards, filling the canal and flushing the drains, and the disease ceased. The total number of cases was 9, of which, as already stated, 3 died.

Ophthalmia was very prevalent in the 50th Regiment both at Kandy and Colombo; in an average strength of 163 men at the former, there were 46 cases, and in an average of 365 at the latter station, 63 were admitted. The Artillery were not affected, only 1 case having occurred in an average strength of 113 men. Surgeon Fraser of the 50th Regiment considered the chief exciting causes of the disease to be the glare of the sun as reflected from the white sandy roads, exposure to the irritation of small particles of dust blown into the eyes, and exposure to cold by night or early in the morning.

Diseases of the digestive organs, although furnishing a smaller

proportion of cases than formerly, are still a source of considerable inefficiency, the admissions having amounted in 1861 to 147, or 162.1 per 1000 of mean strength. Upwards of two-thirds of these were from inflammation of the liver, a disease which has been shown in former Reports to be very common in this island. In 1861, only 2 deaths occurred in 103 cases, being, comparatively, a low proportion.

II. BLACK TROOPS.

The average strength of the black troops in 1861 was 1448; the admissions into hospital were 1939, and the deaths 14, being in the ratio of 1339, and 9.66 per 1000 of the strength; the former about one-third higher, and the latter rather lower than the average of the two preceding years.

Paroxysmal fevers have been the cause of the great increase in the amount of miasmatic diseases. Their excessive prevalence, however, was confined to Trincomalee, where 649 cases of intermittent fever occurred in a detachment of the average strength of 223 men, so that the admissions were nearly in the proportion of 3 to each man of the force.

The prevalence of ague is attributed to the marshy nature of the soil in the vicinity of the station, which is almost surrounded by paddy-fields and cocoa-nut gardens. Only one case of cholera occurred among the black troops.

On the Extent of Invaliding.

There were 14 men sent to England during the year, recommended for discharge as invalids, and 31 for change of climate, amounting together to 49.6 per 1000 of mean strength.

Disease of the liver, ophthalmia, and rheumatism have been the principal causes for which these men were sent home.

Of the black troops, 35 were discharged from the service during the year. Rheumatism and debility are the two principal causes assigned for the discharge of these men as invalids. We have no information as to their length of service, but it is probable that a large proportion of them were old soldiers.

Sanitary State of Ceylon.

The principal medical officer, Dr. Dane, Deputy Inspector-General, reports the mortality to have been comparatively small for a tropical climate, and indicates, with reference to the previous twenty years, that the troops enjoyed a large immunity from cases of serious illness during 1861; yet he observes that the short period of a twelvemonth is not to be accepted as an index to the real character of the climate in regard to the health of either the European or native soldier,—the fact being well known that such periods of comparative freedom from sickness are not unfrequently followed by the very opposite condition. Dr. Dane has been enabled to add that, among both civil and military residents, the type of disease was much milder than had been experienced for some years past;

and that although, no doubt, much of this fortunate condition was owing to the removal of rank vegetation and opening-up of the island for the cultivation of coffee in the course of late years, yet he attributes much of this favourable state of things, as far as the soldier is concerned, to improved hygienic arrangements, more especially in regard to his rations, and the larger amount of cubic space now available for his accommodation through the reduction of the military establishment: two regiments and a company of Artillery now occupying the barracks which, in olden time, formed the residence of five corps, with a large proportion of Artillery. Much more, however, remained to be carried out in sanitary respects throughout the Command, and as questions of colonial finance.

PART V.

AUSTRALIAN AND NEW ZEALAND, BRAZIL
AND PACIFIC STATIONS.ART. LVII.—*On the Health of the Troops in the
Australian Colonies.**Sickness and Mortality.*

I. AUSTRALIA AND TASMANIA.

THE average strength was 907 men, among whom there were 717 admissions into hospital, and 14 deaths, including 2 of invalids sent home to England. These numbers give a proportion of 790 admissions and 15·44 deaths per 1000 of the strength, being slightly in excess of the average of the two preceding years.

II. NEW ZEALAND.

In the beginning of 1861, the troops serving in New Zealand consisted of Royal Artillery, Royal Engineers, the 2nd Battalion 14th Regiment, the 65th Regiment, and detachments of the 1st Battalion 12th, and of the 40th Regiments. In March, an additional battery of Royal Artillery joined from England, and in the end of January the 57th Regiment, and in May the 70th, arrived from India. The troops were actively engaged in field operations till the end of March, and a large proportion of them was subsequently, for a considerable time, under canvas, while huts were being erected.

The amount of rain which fell in 1861 is stated to have been greatly above the average. At Auckland, 57·18 inches were recorded; while the average of six years, as published by Sir H. James, was 47·10.

The average strength of the troops for the year was 4890 men, among whom there were 3070 admissions into hospital and 68 deaths, of which 26 occurred out of hospital. These numbers give the proportion of 628 admissions and 13·90 deaths per 1000 of the mean strength. There were no deaths among the invalids sent to England.

Dysentery and Diarrhœa have exceeded by one-half the average of the two preceding years. *Diarrhœa* was the cause of 241 admissions, and dysentery of 29 admissions and 5 deaths. The fatal cases and nearly all the admissions by dysentery occurred in the 57th and 70th Regiments, which, as already stated, arrived during the year from India. Considering how universally dysentery and diarrhœa are the diseases of troops in the field, the very wet character of the season, and the necessity for keeping a large portion of the force under canvas, even after the active field operations had terminated, it is matter for congratulation that the men suffered so little from this group of diseases.

Sanitary Report—Australia.

In this, a distinct command from that of New Zealand, the principal medical officer, Surgeon-Major Sall, observes that, from so small an amount of disease as occurred, he had been unable, and fortunately, to trace any special causes which could have exercised a prejudicial influence on the health of the men. No epidemic visitation had presented itself at any station, and the sanitary security of the troops was studied with successful result, considering that not a few and long-existing hygienic defects had to be contended with.

On the Epidemic Diseases of Tasmania.

By S. HALL, M.D., of Hobart Town.

Van Diemen's Land, or Tasmania, as it is now generally called, enjoys a highly salubrious climate, as evidenced by the extremely low death-rate among her rural population, this being under twelve per thousand. The town districts, of course, exhibit less favourable returns, in consequence, as the writer showed, of the neglected condition of the lower districts, the accumulation of decomposing refuse, and the defective supply of pure water. Some of the public schools appear to stand much in need of amendment. The most frequent epidemic diseases hitherto have been some of the exanthemata, especially measles and scarlatina, together with hooping-cough. Typhoid fever, if not genuine typhus also, has occasionally carried off a good many victims. Malignant cholera has not yet been seen in the Australian continent or in any of the adjacent islands. The sickly state of several emigrant ships was dwelt upon. —*Proc. Epid. Soc., April, 1863.*

Climate of Western Australia.

In the Report on the sanitary state of the Army in India will be found full particulars of the climate of Western Australia, in the evidence of Staff-Surgeons H. H. Jones, M.D., and D. F. Rennie, M.D. Dr. Jones thinks that, with the exception of New Zealand, it is the healthiest colony in the world.

In a letter addressed to the Director-General, Army Medical Department, Dr. Rennie says:—

"The climate of Fremantle, in common with that of Western Australia generally, is certainly one of the finest in the world; there is a total absence of endemic disease, and anything resembling epidemic influences are rare in the extreme.

"A glance at the returns of sick I have forwarded you of late, will show the remarkable immunity which the troops enjoy from disease; notwithstanding that the larger proportion of them are enrolled pensioners, who have been discharged from the service for physical disabilities and chronic disease more or less severe.

"The requisite supplies for an invalid establishment can be procured at Fremantle by contract at very moderate prices,—that is, as far as the actual necessities of life are concerned; but articles coming under the head of medical comforts, as a measure of economy, would require to be imported from the Government stores in England.

"Fruit, including fine grapes, peaches, and figs, are both plentiful and cheap; the former averaging about 2*d.* per pound.

"Vegetables of all kinds are moderate in price (by contract), of excellent quality, and very plentiful.

"The climate of Western Australia is vastly superior to that of any of the other Australian colonies, including Tasmania, and my sole object in troubling you with these remarks is to place you in possession of reliable information, should the question of an Australian or Tasmanian sanitarium for the invalids of the Indian army become officially discussed in England.

"The period of the year best adapted for the arrival in Western Australia of invalids from India, will be from about the middle of April to the latter end of June; through which, as a general rule, they will be able to enjoy six months uninterrupted cool weather, and, if sufficiently recovered, return to India as the cool season is setting in there."

In his evidence, Dr. Rennie describes the physical effects of the climate as exhilarating and invigorating in the extreme. "Many and many a morning," he says, "on leaving my house to commence my daily duties, have I been struck with the wonderful elasticity of body and mind which the cloudless sky and refreshing atmosphere seemed to develop."

The percentage of deaths in the whole colony by the last census was only $5\frac{1}{2}$ in 1000. Smallpox, scarlet fever, and measles, are as yet unknown. Acute pulmonary affections are also rare in the extreme. A company of the Royal Engineers had in eight years lost only 4 men.

Sanitary Report.—New Zealand.

Mr. Mouat, C.B., V.C., Deputy Inspector-General of Hospitals, in his Report for the year under review, writes as follows with reference to the climate of New Zealand, and other conditions bearing on the health of the troops there:—

"The climate of New Zealand in general, and of Auckland in particular, has been stated to be greatly over-rated, from nearly all the published works being written for a special purpose, giving too

partial an account of the climate of the different settlements, each appearing anxious to extol the particular province; hence the glowing descriptions.

"Auckland, the head-quarters of the Command, situated in latitude $36^{\circ} 51'$ south, and longitude $174^{\circ} 45'$ east, is probably the worst in point of climate, possessing a warmer and more relaxing atmosphere, which is described in books as being 'mild and genial;' but the warm weather is decidedly more unpleasantly warm, and the cool weather less bracing, than in most other parts of the island, while in point of moisture it is quite as damp as any part of the country; therefore, many of the descriptions which have been applied to it are not strictly correct. I cannot give a better idea of its semi-tropical, yet temperate climate, than by stating that it has the power of maturing maize and potatoes equally well, and that the vine grows, but cannot be said to flourish. The extremes of temperature are not so great as in most other climates. The seasons succeed each other in almost inappreciable gradation. Both the air and climate are favourable to exotic vegetation of very different zones.

"The quantity of rain in the year 1861 was 57.08 inches, being nearly 30 per cent. above the average for a series of years, and exceeded that for the year 1860 by about 10 per cent.

"The greatest quantity of rain in twenty-four hours was 3.92 inches, which fell on the 23rd June.

"Atmospheric disturbances by storms were less than the average.

"The range of the barometer in the year was from 29.235 the minimum, to 30.439 the maximum.

"The mean temperature of the air was about a degree above the average, being at 3.30 P.M. $65^{\circ} 4'$, the mean minimum and maximum ranging between $55^{\circ} 8'$ and $70^{\circ} 7'$.

"With regard to the effects of the climate of New Zealand on disease, it does not seem to arrest consumption when fully developed, and, from its cold, wet, and variable nature, perhaps frequently induces this affection where the predisposition exists. It is, however, probably better fitted for pectoral complaints than many European climates which possess some reputation in this respect, and, on the whole, better adapted to the habits and constitution of natives of Great Britain than any of the Australian Colonies; and its effects in restoring the healthy aspect of the two regiments, recently arrived from India, speaks well in favour of its probably beneficial influence on invalids from the tropics. The space of latitude over which New Zealand extends causes considerable variety in the soil and climate, and which latter is further influenced by high winds and rain. Hailstorms are frequent, fogs are rare, and snow is seldom seen near the sea-coast; but the higher mountains of Tongariro and Mount Egmont, at Taranaki, are snow-capped all the year round. The only portion of New Zealand, besides this province, Auckland, of which I have any personal knowledge, is Taranaki, the seat of the late war. This latter district is situated on the west coast of the North-east Island, in latitude $39^{\circ} 1'$ south, longitude $174^{\circ} 15'$ east, being 120 miles from Auckland, and about 1400 from Australia. Rather more rain falls in Taranaki than in Auckland. The climate, accord-

ing to the evidence of Dr. Wilson, R.N., Colonial Surgeon, who has resided there ten years, is benign and temperate, whether with reference to the summer heat or winter cold, and is not very remarkable for sudden vicissitudes. The highest observed temperature in the sun was 124°, the lowest 88°, and the lowest in the shade 33°. Slight shocks of earthquake have been repeatedly felt; one or two occurred while I was there; the south-west and westerly winds are the most frequent, the south winds are the coldest, the north the most humid. The whole physical aspect of the country bears marked evidence of having been the result of former volcanic convulsions. Conical hills are seen, ravines, and small valleys, with here and there a level plateau, and the unmistakable volcanic Mount Egmont in the background, 8800 feet high, looking as if ready to burst out at a moment's notice. Swamps and marshes abound in the district; but the New Zealand swamp, like the Australian, does not appear to cause injurious miasmata. All the islands are of undoubted volcanic origin, an agency which is still going on in some portions of this island; and earthquakes are not uncommon at Wellington, which has been twice desolated since it was colonized, being surrounded by high mountains, and subject to frequent and lasting storms. The climate, however, is said to be finer and more bracing than that of Auckland.

"Wanganui, where there is a large military detachment, is one of the out-settlements of Wellington. It enjoys a somewhat similar climate, and is within reach of the influence of the earthquakes.

"The only other station in the North Island occupied by troops is Napier, the capital of the new province of Hawke's Bay. The climate is reported to be good, but earthquakes are felt there also.

"As climate, hygienic condition of barracks and hospitals, means of ablution, the nature of the duties, and intemperance, constitute the chief references to disease, I shall proceed to consider briefly how far the health of the troops may have been influenced by any of the above conditions.

"First, with regard to climate, and its practical effect on the Saxon race, it is quite true that the statistics of disease show a smaller amount, both of sickness and mortality, than in England; and the late Dr. Thompson, in his valuable work on New Zealand, institutes a comparison between the mortality of troops quartered in England and New Zealand, greatly in favour of the latter. This comparison was made, however, before the improved hygienic condition of the barracks, etc., at home, which has so much reduced the difference. Nevertheless, if it is to be inferred from the statistics in favour of New Zealand that it is more suited to Englishmen or the Saxon race than their own climate, it will be found a fallacy. Statistics made in the infancy of a colony are not reliable, chiefly on account of the absence of epidemic disease, which does not at first appear in a new country. The true test will be found in the deterioration or otherwise of the race, and this has yet to be proved; but, judging from the analogy both of the Australian Colonies and America, the race does not improve by being transplanted, and, unless frequently renewed by fresh blood from the mother-country, will fast degenerate. I

quite agree with Colonel Chesney, that most Englishmen will find the climate of New Zealand more enervating than they supposed, and less suited to their constitution than the more bracing air of their native land, always excepting invalids with a tendency to pulmonary complaints, who cannot bear the cold of an English winter. I would likewise except tropical invalids, and men who have suffered from the exhausting and enervating effects of an Indian service. The marked improvement in the health of the 57th and 70th Regiments, lately arrived, speaks much in favour of the climate of New Zealand in this respect.

"I should think the climate is well suited to benefit sufferers from the enervating effects of a tropical residence, and those labouring under functional derangement without organic lesion of the liver, stomach, or bowels; also those who have suffered from fevers of an intermittent or remittent type, uncomplicated with local disease, such affections being almost unknown in the colony.

"Diseases of the lungs, being of sufficiently frequent occurrence, where at all developed, or where strong predisposition to phthisis exists, are not likely to be much benefited; and I am perfectly satisfied that this climate is not adapted to invalids who have a tendency to affections of the brain or circulatory system.

"Cholera and smallpox have been unknown. Rheumatism is common enough, and, latterly, fever of a typhoid type, diphtheria, measles, and hooping cough are becoming at times prevalent. Both typhus fever and diphtheria prevailed epidemically amongst the civil population at Taranaki shortly after the termination of the war, with considerable mortality, owing to the neglect of proper hygienic precautions in the crowded state of the town, although urgently pressed on the attention of the civil authorities, both by the Colonial Surgeon (a retired naval medical officer) and myself. The troops occupying the same town, on the contrary, from the careful observation of sanitary rules, had not a single case of either disease.

"*Invalids.*—The number of military invalids who left this country during the year was 103, which is only 2.1 per cent. of the average strength; but, as a large proportion were men wounded during the recent war, and I do not know what number will be finally discharged, I cannot exactly state the results.

"*Sanitary Condition of Barracks.*—In conclusion, I have reported elsewhere, specially, the many sanitary defects existing in the barracks and hospitals in this Command, as well as the want of more extended means of personal ablution, in which the different barracks and hospitals are singularly deficient.

"*Intemperance.*—Intemperance, and the use of unwholesome liquors, viz. colonial beer, and the whole host of deleterious compounds exported to a colonial market, but which, in the absence of canteens, generally, cannot be effectually prevented, must prove both a direct and indirect exciting cause of disease among the troops. There is no doubt many lives might be saved were it possible to restrain this abominable vice. The military authorities do all in their power, but the real evil lies in the licensing system, and the want of a proper sanitary police to prevent the sale of bad liquors. No less

than 25 sudden deaths (out of hospital) have occurred during the year, a large proportion of which were due to intoxication. Deaths from drowning have been so common as to lead to the necessity of great precautions in bathing in any of the tidal rivers.

"The health of the force has been undoubtedly somewhat affected by the exceptional circumstances of war, and their prolonged stay under canvas during an unusually wet and tempestuous winter. This was quite unavoidable from the sudden influx of a large force in anticipation of a continuance of war, and for whom no barrack accommodation existed at the time.

"No epidemic form of disease, however, occurred, and the only zymotic disease that could be said to have prevailed was ophthalmia in some regiments, in its usual troublesome form. To this subject I have directed the special attention of medical officers, and have given instructions, both regarding the treatment in the early or vesicular stage, before granulations have formed, and the prophylactic measures to be adopted, and also as to providing special separate means of personal ablution for all so affected.

"Notwithstanding the drawbacks I have alluded to, and the acknowledged irregularities of the British soldier, the regiments quartered in New Zealand have enjoyed a high degree of health, as shown in the ratio per thousand of men who died in hospital from disease and wounds in action, viz. 8·58; but the salubrity of the climate, and the question of expense, which have hitherto been put forward as the excuse, I trust will not be allowed to operate against the introduction of the same extended barrack and hospital accommodation, means of cooking, and personal ablution, which have added so much to the health and comfort of the troops elsewhere, and would, no doubt, tend to a further diminution of mortality here."

On the Extent of Invaliding.

During the year 36 men were sent home from Australia, recommended to be discharged from the service, being in the proportion of 39·7 per 1000 of mean strength. None were sent for change of climate. From New Zealand, 78 men were sent for discharge, and 25 for change of climate, being in the ratio of 15·9 and 5·1 per 1000 of the mean strength.

Rheumatism was the chief cause of invaliding in both Australia and New Zealand, and, from the latter colony, also gunshot wounds.

The number finally discharged from the service during the year cannot be stated separately for each colony, but, collectively, amounted to 61, or 10·5 per 1000 of the strength.—*Army Med. Report*, 1861.

ART. LVIII.—*On the Health of the Navy on the Australian Station.*

The naval force on the Australian Station in the year 1860 consisted of seven vessels, with a mean force of about 940 men. The total number of cases of disease and injury amounted to 1186, of

which 22 were invalided, and 13 died either on the station or on the passage home.

The average number daily under treatment for disease and injury was extremely small, namely, about 41, or at the rate of 43·6 per 1000. It is not a little remarkable, as a proof of the healthy nature of the climate, that the average number daily on the sick list from disease was but a little more than double the number inefficient from wounds and injuries. It is true that large detachments were sent on shore to co-operate with the land force in New Zealand against the revolted Maoris; consequently, wounds and injuries were not only more numerous, but they were in many instances more severe than is usual on this station.

Fever.—There were only thirty-three cases of primary fever put on the sick books during the year, and by far the greatest number of these were of a purely ephemeral character. No loss occurred either by death or invaliding under this head. The returns from the 'Herald' show the greatest number of cases. This vessel continued to be employed, as she had been for the six previous years, on surveying duties. She spent much of her time in laying down the relative position of the numerous coral-reefs which stud the sea for hundreds of miles on the north-eastern shores of Australia, and render the passage of Torres Straits a work of danger, even to the most careful navigators. The surgeon observes with reference to boat-service, that the men were frequently sent away on night duty to register tides, and that by day they were much exposed to the sun, and to heavy tropical rain and dew; yet, with the exception of two slight eruptions of fever, and two cases of dysentery, their health continued remarkably good. This in some measure he ascribed to the protective influence of quinine-wine, which was given to the men while employed in boats, and to their having been compelled to wear flannel clothing when sent on night duty, or when employed on shore in tents; but there can be no doubt that the absence of febrile diseases was chiefly to be ascribed to the salubrious nature of the climate.

Ten cases appear in the returns from the 'Cordelia,' but they were all of a very unimportant character, and seem to have been for the most part consequent on exposure to wet tempestuous weather on the coast of New Zealand.

Aguish attacks were most numerous in the 'Elk'; but, as stated in the remarks for the preceding year, the disease had been originally contracted on the coast of China, where the vessel was employed for some time previously to her arrival on the Australian Station.

In the 'Elk,' 'Fawn,' and 'Iris' there was not a single case of primary fever; in the 'Niger' there was one of rather a severe character, and five appear in the returns from the 'Pelorus.'

During the year detachments of officers, seamen, and marines were landed from the 'Niger,' 'Iris,' 'Pelorus,' and 'Cordelia,' at New Plymouth, on the west coast of New Zealand, for the purpose of acting with the land forces assembled there against the insurgent Maoris. These detachments were formed into a separate brigade, called the Naval Brigade. As soon as the men landed, they were placed under canvas, or in huts made of rushes, until the necessary

arrangements were completed for an advance on the outposts of the enemy, which took place about the end of June, and from this time the brigade was actively employed with the troops until the end of September; and though subject to all the vicissitudes of a camp life, exposed to cold and wet, harassed with toilsome marches, and frequently engaged with the enemy, yet, with the exception of an epidemic of influenza, they enjoyed the most perfect health, and returned to their respective ships in better condition, and more fit to endure fatigue, than when they left them. The only loss sustained while in the field was two men killed, and about twenty wounded. Thus we have the most convincing proof that these regions are as free from fever-exciting miasmata as the southern shore of Australia in the same parallels of latitude.

The only other noteworthy point in the health-history of this station is the large increase in the ratio of catarrhal complaints, owing to the prevalence of influenza both on shore and on board ship, not only at New Zealand, but along the shores of Australia. The disease showed no new feature.

Of the 13 deaths from all causes, 5 only were from disease. Of the 8 accidental deaths, 7 were blue-jackets and 1 a Marine.

22 men were invalided, namely, 18 for disease, and 4 from hernia and disability consequent on wounds. The greatest loss under this head was from rheumatism. The total loss by death and invaliding amounted to 35 men, or in the ratio of 37·3 per 1000 of mean force.—*Naval Med. Report*, 1860.

ART. LIX.—*Brazil and Pacific Stations.*

Brazil Station.

There were eight vessels employed on the Brazil Station in 1860, with a mean force of 1250 men. The number of men daily sick averaged 63·5, or in the ratio of 50·8 per 1000 of mean force. The total number of cases of all diseases and injuries amounted to 1770, of which 30 were invalided, and 17 terminated in death; the former being in the ratio of 24·0, and the latter of 13·6 to the 1000 of mean force: these ratios, owing to the absence of yellow fever in its epidemic form in any of the cruisers, contrast most favourably with the three preceding years.

Pacific Station.

The naval force employed in the Pacific in 1860 consisted of seventeen vessels, with a mean force corrected for time of about 3490 men. There were 5848 cases of disease and injury tabulated on the sick books of the squadron, of which 124 were invalided, and 37 died. Total loss by death and invaliding 161, or 46·1 per 1000 of force.

This station is remarkable for its salubrity. Under the head of *Fevers* we note the following passages:—

"As an instance of the healthy nature of the climate in the Pacific, it is worth mentioning that this vessel (the 'Calypso') anchored at Tahiti on the 25th of June, where she remained until the 11th of September, and, in consequence of her leaky state, she was hauled alongside the quay at Papiete, dismantled, and hove down; meanwhile the crew took up their abode on the shore adjoining, some sleeping in tents, and others lying about in different storehouses. As the yard, which was leased to a private individual, was only partly enclosed, and used by persons connected with the merchant shipping, there was access at all times and to all comers; it was therefore impossible to prevent the introduction of ardent spirits. 'For the first month the men were very intemperate; leave was given every night to a certain number, and twice during our stay to all hands. The weather was intensely hot, and at the full and change of the moon heavy showers were frequent.' In almost any other part of the world, at all events on the African coast, whether east or west, on the coast of China, on the coast of Central America, or on any of the West Indian Islands, these irregularities would, in all probability, have been followed by much sickness; but here, such is the nature of the climate, that the crew of the 'Calypso' continued to enjoy the most perfect health. For the space of three months only 3 or 4 cases of a febrile nature were put on the sick-list, but so slight that in the aggregate they were not under treatment more than twenty-eight days. There were no diseases of the lungs, the bowels, or liver, of the slightest importance; for instance, 6 cases of diarrhoea were in the aggregate fourteen days on the sick-list, and only 3 cases of syphilitic nature occurred; considering the arduous nature of the service the men had to perform, their constant exposure to the sun, the reckless intemperate lives they led by day and night, it is truly marvellous how little they were affected by a climate so different from their own.

"Amongst a company of Royal Marines which was stationed on the island of San Juan, there was no disease of a febrile nature; thus showing that, whether on shore or afloat, these regions are free from the miasmata which give rise to this particular class of maladies.

"The 'Vixen' during the entire year was employed on the coasts of Peru and Chili, anchoring occasionally at Guayaquil, Callao, the Chincha Islands, Payta and Valparaiso; her crew, on the whole, were remarkably healthy; four cases of fever only were put on the sick-list, with an aggregate loss to the service of twenty-three days only. In the 'Tribune,' which left the station to return to England, there were six cases, and in the 'Hecate' and 'Mutine,' which arrived on the station, there were none.

"*Syphilis*.—The prevalence of the disease in the new settlement at Esquimalt is much to be regretted, and forcibly calls for some legislative interference, similar to that at Honolulu; otherwise there is every reason to fear it will spread far and wide amongst the unsuspecting natives, who, with the exception of those employed in or about the colony, are still comparatively free from it."—*Naval Med. Report*.

PART VI.

EAST INDIA AND CHINA STATIONS.

ART. LX.—*On the Health of the Troops serving in India.*

Sickness and Mortality.

THE average strength of the European troops, exclusive of those of the late Hon. East India Company, was, as shown by these returns, 57,082; the admissions into hospital among them amounted to 102,353, and the deaths to 2002. But there were, in addition, 95 deaths among invalids on their passage home, or at the Invalid Depôts shortly after their arrival in England, which increase the total mortality to 2097. These numbers give the proportion of 1768 admissions, and 36·74 deaths, per 1000 of mean strength.

The following Table shows the relative sickness and mortality in each of the Presidencies :—

	Average Strength.	Admissions into Hospital.	Deaths.			Ratio per 1000 of Mean Strength.			
			In India.	Of Invalids.	Total.	1861.		1860.	
						Admitted.	Died.	Admitted.	Died.
Bengal . .	37,483	73,233	1,642	66	1,708	1,954	45·57	2,023	39·37
Madras . .	10,739	13,471	156	14	170	1,254	15·83	1,487	22·63
Bombay. .	8,860	15,649	204	15	219	1,766	24·72	1,933	31·70

These ratios show a decrease in the admissions into hospital in all the Presidencies, but less marked in Bengal than the others. There is also a reduction in the mortality of the troops in Madras and Bombay, but an increase in Bengal.

The decrease in the admissions in all the Presidencies was chiefly in miasmatic diseases and those of the digestive system. In Bengal there is a marked increase in the mortality by miasmatic diseases, and a slight increase in that by diseases of the digestive

system ; but in Madras there is a decrease in the ratio by both these classes, and in Bombay by miasmatic diseases. The increase in Bengal was caused by an epidemic of cholera, which raged with great severity in the third quarter of the year. Exclusive of the deaths by it, the ratio of mortality amounted only to 22 per 1000 of the strength.

MIASMATIC DISEASES.—The chief groups comprised under this heading have occasioned the following amount of sickness and mortality in each of the Presidencies in 1861 :—

	Bengal.		Madras.		Bombay.		Ratio per 1000 of Mean Strength.					
							Bengal.		Madras.		Bombay.	
	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.
Eruptive Fevers	222	32	7	1	29	4	5·9	·85	·6	·09	3·3	·45
Paroxysmal „	17,436	74	1,369	6	4,175	17	465·2	1·97	127·5	·56	471·2	1·92
Continued „	7,778	86	1,248	7	1,231	8	207·5	2·29	116·2	·65	138·9	·90
Dysentery and Diarrhœa	2,957	198	1,584	26	1,501	50	78·9	5·28	147·5	2·42	169·4	5·64
Spasmodic Cholera	1,423	880	70	29	48	35	38·0	23·48	6·5	2·70	5·4	3·95
Sore-throat and Influenza	980	1	115	..	249	..	26·1	·03	10·7	..	28·10	..
Ophthalmia	2,639	..	320	..	611	..	70·4	..	29·8	..	69·0	..
Rheumatism	2,894	3	746	..	625	..	77·2	·08	69·5	..	70·5	..

Paroxysmal Fevers.—Compared with the amount in 1860 there has been a reduction to the extent of one-half in Madras, and one-fourth in Bombay, while in Bengal there has been no change. The mortality by this group of diseases, however, has been lower than in the preceding year in all three Presidencies.

Continued Fevers have been less prevalent in all the Presidencies, and less fatal in Madras and Bombay, but particularly in the latter. In Bengal the ratio of deaths has been very slightly above that of 1860.

Dysentery and Diarrhœa have undergone a very marked diminution in their prevalence in Bengal, but without any corresponding change in mortality ; in Madras also there has been a reduction in these diseases, while in Bombay the admissions have been nearly the same, and the deaths a little higher than in the preceding year.

Spasmodic Cholera has been the cause of a high rate of mortality in Bengal, the deaths having amounted to 23·48 per 1000 of the strength, or more than half of the total mortality in that Presidency. In Madras there was a slight reduction, and in Bombay a very considerable one in the deaths by this disease. The proportion of deaths to cases was 1 in 1·55, being rather higher than in the preceding year, when it was 1 in 1·82.

TUBERCULAR DISEASES have given rise to a lower ratio of mortality

in Madras than in 1860. In the other Presidencies the results correspond very closely in the two years. As noticed in last Report, a large proportion, amounting in the present instance to one-fourth of the deaths by these diseases, occurred among the invalids after they had left India.

SUNSTROKE, or heat-apoplexy, has been recorded as the cause of 35 admissions and 9 deaths. In 1860 it gave rise to 38 admissions and 22 deaths. The reduction in the mortality has been most marked in Bombay.

I. BENGAL.

The following Table shows the amount of sickness and mortality at the principal stations in the Bengal Presidency:—

Military Divisions.	Stations.	Average Annual Strength.	Admitted into Hospital.	Died in India.	Ratio per 1000.	
					Admitted.	Died.
Presidency	Calcutta	929	2,130	28	2,315	30.14
	Barrackpore	621	1,172	27	1,887	43.48
	Dum Dum	228	435	9	1,908	39.47
	Raneegunge	148	273	10	1,845	67.57
	Hazareebaugh	939	2,242	12	2,395	12.82
Benares	Dinapore	620	1,148	14	1,852	22.58
	Berhampore	255	472	6	1,851	23.53
	Benares	748	1,839	16	2,459	21.39
	Azinghur	35	44	1	1,257	28.57
	Goruckpore	900	1,511	16	1,679	17.78
Saugor	Saugor	666	1,708	8	2,565	12.01
	Nowgong	236	449	3	1,902	12.71
	Jubbulpore	904	2,366	19	2,623	21.02
	Morar, Gwalior	853	2,583	185	3,028	216.88
Gwalior	Fort Gwalior	254	340	10	1,339	39.37
	Lullutpore	155	982	4	6,335	25.81
	Jhansi	584	1,587	21	2,717	35.96
Oude	Allahabad	1,235	2,960	58	2,397	46.96
	Cawnpore	862	1,834	52	2,128	60.32
	Setapore	624	941	7	1,508	11.22
	Lucknow	1,827	2,372	24	1,298	13.14
	Roy Bareilly	504	436	8	865	15.87
	Fyzabad	1,106	1,806	7	1,633	6.33
Rohilcund	Gondah	586	834	15	1,423	25.60
	Shahjehanpore	423	499	3	1,180	7.09
	Moradabad	396	626	15	1,581	37.88
	Bareilly	1,146	1,713	16	1,495	13.96
	Futtyghur	419	680	6	1,623	14.32
Meerut	Agra	710	2,064	64	2,907	90.14
	Delhi	994	2,373	97	2,387	97.58
	Meerut	1,887	3,470	102	1,839	54.05

Military Divisions.	Stations.	Average Annual Strength.	Admitted into Hospital.	Died in India	Ratio per 1000.	
					Admitted.	Died.
Sirhind .	Umballa	1,759	3,916	75	2,226	42·64
	Dugshai	944	484	6	513	6·35
	Subathoo	743	1,146	19	1,542	25·57
	Jullundur	939	910	8	969	8·52
	Meean Meer (Lahore) .	1,219	2,893	430	2,373	352·75
Lahore .	Umritsir	395	812	49	2,056	124·05
	Ferozepore	848	1,889	91	1,638	10·61
	Mooltan	161	366	4	2,273	24·84
	Sealkote	1,330	2,374	13	1,785	9·77
	Rawul Pindee	1,834	3,028	15	1,651	8·18
Peshawur .	Campbellpore	190	259	3	1,316	15·79
	Nowshera	633	1,288	6	2,035	9·48
	Peshawur	1,604	3,942	16	2,458	9·97
	Camps, and on the march	1,756	2,409	30	1,371	17·08
	Convalescent Stations, Detachment and Depôt Hospitals, etc. .	1,334	4,137	96	3,101	71·96
Total		37,483	73,233	1,642	2,105	47·21

This shows a reduction in the sickness at many of the stations, and, with the exception of Lullutpore, where a small force only was quartered, at none has the amount been equal to that at Raj Ghat, Benares, in 1860. There has, however, been a considerable increase at others, principally those in the Lahore Division, and at Agra, Saugor, Morar, Meerut, Umballa, and Peshawur. In the mortality there has also been generally a reduction, but to this there are some very marked exceptions, as Meean Meer (Lahore), Morar, Delhi, Meerut, and Umballa. The high mortality at these stations was due to the prevalence of cholera as an epidemic.

The rate of mortality has been extremely high in the Lahore, Gwalior, and Meerut Divisions, chiefly from cholera; and it has also been high in the Presidency, Gwalior, and Meerut Divisions from dysentery and diarrhœa. In the Presidency Division these two diseases were most fatal at Barrackpore; in the Gwalior, at Morar; and in the Meerut, at Delhi. In the Peshawur Division, the mortality was under 1 per cent.; in the Benares, Saugor, and Rohilcund Divisions, under 2 per cent.; and, if cholera be deducted, it was under 2 per cent. also in the Oude Division.

During the first five months of the year, although several cases of cholera proved fatal at Calcutta and Dum Dum, the disease did not prevail as an epidemic. Towards the end of May it broke out in the 54th Regiment at Cawnpore, the first fatal case occurring on the 25th, and between that date and the 15th of June, twelve deaths were caused by it. The disease then appeared to cease.

In the beginning of July there was a fatal case in the 82nd Regiment at Delhi, and a few days later two in the 8th Hussars at

Meerut. The disease then appeared in succession at Agra, where the first fatal case occurred on the 14th; at Allahabad, on the 18th; Morar, Gwalior, on the 24th; Cawnpore, on the 29th; Umballa, on the 30th; and Meean Meer, the European cantonment of Lahore, on the 7th of September. These are the dates of the first deaths reported, as the returns do not enable us to state those of the occurrence of the first cases if they recovered. The disease continued to prevail at some of the stations till the end of September. Dr. Linton reported that during the epidemic, from its commencement at Cawnpore in May till its cessation in December, there were 1303 admissions and 837 deaths among the men, showing a mortality of 10 in every 15·6 cases.

Nearly one-third of the right wing of the 94th Regiment, and upwards of one-fourth of the 51st Regiment, both stationed at Meean Meer (Lahore), were cut off by this disease in the course of a few weeks. The 27th, at Morar, Gwalior, lost upwards of one-seventh of its numbers, and the mortality was also very high in the E Troop, Royal Horse Artillery, at Meean Meer, and the left wing of the 94th Regiment at Umritsir. This epidemic in one quarter caused upwards of half the deaths which occurred among the European troops during the whole of the year, and was so virulent that two out of every three cases terminated fatally.

At most of the stations, when the disease became epidemic, the troops were moved out of their cantonments and encamped. As the returns, however, do not enable us to trace correctly and minutely these changes, we have included the cases and deaths in each corps as having occurred at the station where it was quartered when attacked.

The range in the proportion of admissions from the different corps was not so great as in 1860, varying from 3196, in the Royal Artillery at Peshawur, to 511, in the 92nd Regiment at Dugshai. The extreme range of mortality, however, was much greater than in the preceding year, the Artillery at Peshawur having recorded no death, while the 51st Regiment at Meean Meer lost 238 men, or in the proportion of 286 per 1000 of the mean strength. In the regiments which served throughout the year in Bengal, the sickness was very high in the 7th Battery, 11th Brigade, Royal Artillery, at Peshawur; the 2nd Battery, 14th Brigade, at Raj Ghat, Benares; the 27th Regiment at Morar, Gwalior; and the 89th at Umballa. It was much below the average in the 6th Battery, 14th Brigade, Royal Artillery, at Roy Bareilly; the 46th Regiment at Jullundur and Phillour; and the 92nd at Dugshai. The mortality was greatly in excess in the 27th Regiment at Morar, the 51st at Meean Meer, the 82nd at Delhi, the 94th at Meean Meer and Umritsir, and the E Troop, Royal Horse Artillery, at Meean Meer. The proportion was also very high in some of the corps which were only part of the year in the country, as the 3rd Battery 14th Brigade Royal Artillery, and the 70th Regiment. On the other hand, the deaths in several did not exceed the average among troops at home or in healthy temperate climates, as in the 93rd Regiment at Rawul Pindee, the 7th at Nowshera and Peshawur, the 46th at Jullundur and Phillour,

the 7th Hussars at Sealkote, the 79th Regiment at Ferozepore, the 92nd at Dugshai, and in the 1st Battery 11th Brigade Royal Artillery, and the 34th Regiment at Fyzabad. The 7th Battery 11th Brigade Royal Artillery at Peshawur, though having the highest ratio of admissions, did not return a single death.

II. MADRAS.

The sickness and mortality during the year at each of the principal stations in this Presidency are shown in the following Table :—

		Lat. N.	Long. E.	Average Annual Strength.	Admitted into Hospital.	Died at each Station.	Annual Ratio per 1000.		1860. Annual Ratio per 1000.	
							Admtd.	Died.	Admtd.	Died.
Sea-coast	Madras . .	13°6	80°21	936	1259	6	1345·1	6·41	2244	17·42
	Cannanore . .	11°51	72°56	1083	1045	10	964·9	9·23	1045	7·08
	Bangalore . .	12°57	77°38	672	674	22	1003·0	32·73	818	14·15
Table-lands .	Bellary . .	15°5	76°55	858	1276	12	1487·2	13·98	1100	12·87
	Secunderabad	17°26	78°32	2970	4633	49	1559·9	16·49	1931	24·85
	Kamptee . .	21°15	79°14	1061	1427	13	1344·9	12·25	1660	31·69
Hill . .	Wellington .	...	...	960	513	19	534·4	19·78	774	20·74
Birmah	Rangoon . .	16°46	96°17	1101	1172	11	1064·5	9·99	1094	5·12
	Tonghoo . .	19°	96°18	988	1273	9	1288·5	9·11	1692	16·43

It will be seen from this Table that there has been a decrease in the admissions into hospital at all the stations compared with the results of 1860, except Bangalore and Bellary, and in the deaths, except at Cannanore, Bangalore, Bellary, and Rangoon; and it is only at Bangalore that the increase has been considerable.

Spasmodic Cholera was less fatal at all the groups of stations than in 1860. It prevailed, however, to a great extent in the 1st Dragoon Guards at Bangalore, and at one time threatened to assume an epidemic form in the 66th Regiment at Cannanore. The left wing of the 1st Dragoon Guards arrived from China at Madras early in January, and was sent up to Bangalore in four detachments. A case of cholera occurred in the second detachment when near Kistnagherry, about forty-five miles from Bangalore; another case occurred before, and 2 more immediately after its arrival at its destination on the 26th of January. 3 cases of the disease occurred in the fourth detachment on the line of march. Notwithstanding the immediate adoption of every possible precaution, the disease spread among the troops at Bangalore, and continued to prevail there till the 16th of April, when it ceased. Including those already mentioned, there were 36 cases among the men of the regiment, of which 16 terminated fatally. There were also 2 cases and 1 death among the officers; 4 cases and 2 deaths among the women; and 2 cases and 1 death among the children.

Cholera is stated to have been very prevalent in the district of Malabar from March to September, and in the 66th Regiment at Cannanore 10

cases and 4 deaths occurred. An epidemic of great severity made its appearance at Madras in June among the native population, and continued its ravages till October. Dr. Barclay, the Surgeon of the 43rd Regiment, states that "200 or 300 persons perished from it weekly within the limits of the city for a considerable time, and the total number of deaths must have amounted to several thousands;" but not a single case occurred among the troops in Fort St. George.

The ratio of admissions into hospital was highest in the 17th Lancers at Secunderabad, and lowest in the 3rd Battalion 60th Regiment at Wellington; but the ratio was lower than in 1860 in all the corps, except the 74th at Bellary. The mortality also has been lower in most of the corps, the only notable exception being the 1st Dragoon Guards at Bangalore, in which a great increase was caused by the epidemic of cholera.

III. BOMBAY.

The following Table shows the sickness and mortality among Her Majesty's European troops in Bombay at each of the stations occupied in 1861:—

Military Division.	Station.	Average Strength for the Year.	Admitted into Hospital.	Died on the Station.	Ratio per 1000.	
					Admitted.	Died.
Presidency .	Colaba	612	1862	39	3042	63·72
	Khandalla (General Depôt)	72	99	5	1375	69·44
Poona . . .	Poona	1121	1618	23	1443	20·52
	Poorundhur (Sanitarium)	50	112	2	2240	40·00
	Sattara	156	252	2	1615	12·82
	Ahmednuggur	592	832	10	1405	16·89
	Asscerghur	91	162	2	1780	21·98
	Belgaum	926	1771	9	1912	9·72
Mhow . . .	Mhow	1255	1836	26	1463	20·72
	Indore	82	96	1	1171	12·19
	Neemuch	216	748	7	3630	32·41
	Nusseerabad	1108	2319	48	2093	43·32
	Ajmere	61	128	...	2098	...
	Tarraghur	42	30	1	714	23·81
Northern . .	Deesa	713	1191	1	1670	1·40
	Ahmedabad	79	154	4	1949	50·63
	Surat	61	293	3	4803	49·18
	Mount Aboo (Sanitarium)	90	264	3	2933	33·33
Scinde . . .	Kurrachee	667	778	10	1166	14·99
	Aden	576	687	5	1193	8·68
	On the march, etc.	290	708	3	2441	10·34

This Table shows a great range both in the sickness and mortality at the different stations. Omitting some of those at which, from the small number of men employed, a fair average could scarcely be looked for, the admissions will be found to vary from 1166 at Kurachee to 3630 at Nemuch, and the deaths from 1·40 at Deesa to 63·72 at Colaba per 1000 of mean strength; the latter ratio, however, is no doubt much increased by the invalids who have been sent to Colaba. The high proportion of sickness at Neemuch was caused by intermittent fever, which gave rise to nearly two-thirds of the admissions at that station.

In the Presidency and Mhow Divisions only has the mortality exceeded 16 per 1000, or the rate which, till within the last few years, prevailed among the troops serving in the United Kingdom. The very high ratio in the Presidency Division was caused chiefly by dysentery and diarrhœa, hepatitis, and remittent fever at Colaba, and the high ratio in the Mhow Division by cholera at Nusseerabad. This disease became very prevalent and fatal among the native population of Ajmere early in July, but none of the men of a company of the 28th Regiment quartered in the Fort were attacked. On the 15th of July a case occurred in the head-quarters of the 28th at Nusseerabad, but recovered. About a fortnight afterwards cholera broke out with great severity in the 3rd Dragoon Guards at the same station, and on the 30th of July attacked the 28th Regiment. In these two corps it continued to prevail for some weeks, while a battery of Royal Artillery and the 1st Bombay Lancers escaped, and a Native Infantry Regiment in the same cantonment did not suffer till towards the end of the epidemic. No explanation has been given of this remarkable exemption enjoyed by the Artillery and Lancers, while the disease in a most virulent form prevailed in the other regiments in the same cantonment. It is also worthy of note that while at Ajmere the native population suffered severely and the troops completely escaped, the native population at Nusseerabad is stated to have been affected to a very slight extent, while the disease was so fatal to a portion of the garrison.

On the Extent of Invaliding in India.

The returns show that the number finally discharged the service as invalids during the year was 857, or in the ratio of 15·01 per 1000 of mean strength. Rheumatism and eye diseases have been the two most frequent causes of permanent inefficiency. Pulmonary diseases, chiefly consumption, also hold a very high place; and next to these, heart affections, mental diseases, dysentery, and hepatic disease.

Diseases of the digestive system, with dysentery and diarrhœa, have been the principal causes of invaliding for change of climate.

Mean Daily Sick.

The average number constantly sick in the Bengal Presidency, as stated in the quarterly returns, was 3009; in Madras, as given in the annual return, 619; and in Bombay, 647. These numbers furnish the following results, to which, for the sake of comparison, we have annexed those of the preceding year:—

	Bengal.		Madras.		Bombay.	
	1861.	1860.	1861.	1860.	1861.	1860.
Ratio per 1000 constantly sick	80.27	74.89	57.64	62.97	73.02	66.21
Average sick-time to each soldier	Days. 29.39	Days. 27.33	Days. 21.04	Days. 22.98	Days. 26.65	Days. 24.17
Average duration of cases .	14.91	13.51	16.77	15.55	15.09	12.50

The general results as to the relative number constantly sick, and the duration of the cases in each of the Presidencies, correspond with those shown in last Report. There has, however, been an increase upon the results of 1860, except in the mean sick and average sick-time to each soldier in Madras, which have been slightly below the previous average. The duration of the cases, however, has been greater there as well as in the other two Presidencies.

On the Influence of Age on the Mortality.

The Madras and Bombay returns show that there has been a very great increase in the mortality at 30 years of age and upwards, a result in accordance with the observations at almost all the tropical stations where British troops are employed.—*Army Med. Report*, 1861.

ART. LXI.—*Typhoid Fever in India from a Sanitary point of view: its Clinical Characters, Morbid Anatomy, and Etiological Relations.*

By W. HANBURY, Esq.,
Surgeon, 33rd Foot.

This is a very able and important paper, in which Mr. Hanbury invites attention to a fever very unusual in India, for in his experience, extending over ten years, he had not met with examples of similar changes of structure in any disease. He narrates six fatal cases which occurred in the 33rd Regiment at Deesa, in the autumn of 1859. The *post-mortem* appearances are minutely detailed, and tend to fix the identity of the disease with that of European typhoid fever.

The second division of the paper is occupied with the consideration of the etiological conditions, overcrowding, and defective conservancy arrangements; the third, with the removal of the etiological conditions, and the successful results.

"The disease," the author observes, "in its sanitary relations was indeed full of significance and highly instructive; and it will be found that the conditions under which it occurred, as well as the absence of these conditions, determined the standard of health and physical efficiency of the troops, and shaped, in a great degree, the medical history of the regiment during the whole period of its service in Guzerat."

The following is the concluding portion of this instructive paper:—

“Having thus fully examined the conditions under which this fever was observed, explained the measures recommended for their removal and amendment, and stated the particulars in which the suggestions were carried out, we proceed, lastly, to note the results as expressed in disease. Our attention may be confined chiefly to the months of May, June, July, August, and September, for nearly all the mortality from endemic disease occurred in these months, and the fever of this type was not observed at any other period of the year. The facts are few, but striking and important.

“In 1859 the average strength of the regiment in May, June, July, August, and September, was about 987. 8 men, all single men, and residents of the barracks proper, died from fever, in 6 of whom the autopsy disclosed the peculiar lesions elsewhere described; while a great many cases of a severe kind were received under treatment marked by the uncertain and protracted convalescence so characteristic of typhoid fever. During the same month, in 1860, the average strength was about 765, and 2 men died under the head of fever; one from secondary abscess of the neck exposing the spine, and producing fatal exhaustion, the other from dysenteric complication, attended with ulceration of large intestines, and there were very few instances of fever accompanied by serious symptoms. Lastly, in 1861, the average strength in these months was 870, and no casualty from fever occurred, nor did the disease present itself in any other form than that of the mild recurring intermittent type.

“It may be further mentioned—for it seems worthy of some notice—that the number of deaths at Deesa, in 9 months of 1859, from endemic disease, was 21; in 12 months of 1860, 15; and in 13½ months, ending 31st December, 1861, 1 only, and this the result of diarrhoea of long-standing, contracted during the preceding year at Mount Aboo.

“In former days these results would have been referred to difference of season, and the liability to disease incurred by the age, and the recent arrival in the country of the class of men which experienced the highest mortality; but sanitary science is not entirely satisfied by such an explanation. It is doubtless true that the year 1859 was hotter than the two succeeding years—the register of the thermometer kept at Deesa proves this—and it may in other particulars have been a more unhealthy year; but if the nature of the season during these years fairly accounts for additional sickness and mortality in 1859, it will not explain the unusual structural lesions which formed the specific characters of this disease; and it is a matter of fact that the men of the European artillery who arrived at the station in June, 1859, and were provided throughout with ample barrack accommodation, enjoyed nearly as good, if not quite as good health that year as either of the following years, and presented no examples of this kind of fever. Again, we cannot hesitate to admit that age and length of residence in the country determined, in a greater or less degree, the amount of sickness and mortality in these

years; but, on the other hand, it may be very justly asked, why should disease among the young soldiers find its expression in this kind of fever, and has any connection been observed in other parts of India between length of residence in the country and the occurrence of a disease distinguished by morbid changes of this description? Without ignoring, then, the effects of age, length of residence in the country, and difference of season, which, as regards the two former at least, would probably in any case have been considerable, it seems impossible not to admit—1st, that these cases were true examples of “typhoid fever;” 2nd, that the structural changes observed were the result of the special action of the unfavourable vital conditions noticed above, how much soever climate and other causes may have aided or modified their operation; 3rd, that the disappearance of the disease, and the subsequent development of a high standard of the health (which has seldom been equalled, perhaps never surpassed, in India) were not the results of favourable season or acclimatization so-called, but are mainly to be referred to the improved conditions of life already described; 4th, that the medical history of the regiment during the last three years, so far as it goes, supplies an illustration of sanitary science, and one which, perhaps, in the interest of the soldier, it might be well not only to remember, but to apply.”

Diet of the Soldier.

It is a very general, and, we believe, erroneous opinion, that the European soldier in India is over-fed. Mr. Hanbury takes so sensible a view of this diet question that we recommend the following remarks to the notice of our medical brethren:—“It is generally understood that the soldier is well fed in this country, and it cannot be doubted that he is supplied with a very liberal allowance of animal and vegetable food; but, strange as it may appear, the occurrence of fever of this kind in the regiment has forcibly suggested the use of an unsustaining and defective diet as an accessory cause, and I feel reluctantly compelled to record my opinion to this effect.

“Notwithstanding the attention which has been given to this important subject by a beneficent and liberal Government, I am not satisfied (and it would be a suppression of my sincere convictions to avoid saying so) that the food of the English soldier is of sufficiently good quality during the months of May, June, July, August, and September. It is true that his rations are made up of similar elements—animal and vegetable—and in the same quantity, as at any other season of the year, but the meat is grass-fed. In May and June there is little or no grass for cattle to pick up, and they must feed mainly on chopped straw; while in July and August the grass is young and soft, nor does it acquire any fattening properties till the end of September, when the seed has ripened. Further, in August, September, and October, potatoes or sweet potatoes are in many stations, it is to be feared, not regularly available (though there is really no efficient substitute for them in India), and the vegetables chiefly supplied are onions and pumpkins; the latter of which the soldier holds in little estimation, and will not always eat, while

the former probably possesses feeble nutritive properties. In the summer and autumn months of 1859 the meat was lean, aplastic, and innutritious, and no fresh vegetables, except onions and pumpkins, as a very general rule, were issued to the troops: the latter were often thrown aside by the men; and after the commencement of the rains, I have no doubt that the meat was not only innutritious, but that it possessed, in fact, purgative properties, for at this season of the year, I have since ascertained, that beef-tea, even when carefully made, is often objected to on the part of patients, on the ground that it passes off rapidly, and brings on looseness of the bowels. What is the reason of this result is a question which need not be discussed here. It may be stated that the grass at this season purges the cattle instead of improving their condition, and it is possible the relaxing effect of the meat used as food may be in part derived from this quality of the grass upon which they are fed; while it is obvious that, if the meat itself is not fit for the purpose of complete assimilation, it will act as an irritant to the bowels, and must be expelled. But, whatever explanation is correct as to this point, it will be readily admitted that food of the description here indicated might constitute a predisposing cause (through want of sufficiently nutrient properties) of a disease remarkable for low adynamic symptoms; nor is it difficult to conceive that it might aggravate the intestinal lesions and the diarrhœa, which formed such characteristic features of the affection itself. That my views on this subject were somewhat similar at the time, appears, moreover, from the following extract from my Report on the 'Climate and Topography of Deesa,' which has been published in the Statistical, Sanitary, and Medical Report of the Army Medical Department for 1859:*

"Although the dietary of the British soldier in this country has frequently engaged the attention of Government during the last few years, and has undergone much improvement by the introduction into it of a pound of fresh vegetables, as well as by the allowance of an increased quantity of sugar, yet I regret to have to state that the meat supplied to the troops at this station, from the beginning of April† to the end of August, was generally of inferior quality, and deficient in sustaining power, owing to the want of grass for cattle, and that the supply of vegetables was, for a great part of the same period, to a great extent limited to onions and pumpkins; the latter of which, being considered by the men of little use as an article of food, was sometimes looked upon with aversion, and often left uneaten, either from distaste, or from fear of its producing diarrhœa.

"To the defects in the rations here noticed, I attributed in part the feeble exsanguined appearance presented by a large proportion of the men during the last few months, as also, in a certain degree, the low asthenic symptoms observed in some cases of fever, and I thought it proper to recommend that four ounces of dholl—one of

* Page 191.

† The period of the year during which the rations deteriorate in quality is subject to slight change, depending on difference of seasons; in one year the meat continues good up to the middle of May, in another it begins to want condition early in April.

the pulses rich in nitrogen—should be issued twice a week to the European troops at the station, as a substitute for the ration of rice. I may add that this was the only suggestion available under the circumstances, for it was found impossible to supply meat of a better description, and all the exertions of the Brigadier commanding failed to procure other kinds of vegetables, as potatoes, turnips, carrots, sweet potatoes, etc. Happily it was, however, immediately acted upon, and since the 1st of September the soldier has enjoyed and used with advantage, as pea-soup, curry, puddings, etc., this valuable and too much neglected article of food, which has at once the rare merit of compensating for the nitrogen deficient in the meat, and adding variety to the vegetable element of the diet.’*—*Army Med. Report*, 1861.

ART. LXII.—*On the Prevalence of Typhoid Fever in the Bombay Presidency.*

By JOHN PEET, M.D.,

Professor of Medicine, Grant College.

“Before narrating his own experience of this disease, the author* glances at the ground of distinction of this form of continued fever, regretting, like many others, that the term ‘Typhoid’ should have been applied to it, and in order to render his subsequent remarks more clear, the characters of the disease, as laid down by a distinguished English physician, were read to the Society. The attention of Dr. Peet to the existence of typhoid fever in Bombay was first excited by the occurrence of a case in the beginning of 1859, which he had been requested by one of the College graduates to see. This young patient’s case was marked by peculiar features, which precluded its being regarded as one of ordinary remittent fever, with abdominal symptoms, and which favoured the view of its being typhoid fever. Since then, numerous similar instances had come before the notice of the author, most of which had not been watched sufficiently long to enable him to lay a full account of them before the Society (though not on that account less impressive to the observer himself); five or six cases however, more or less typical in their features, were related in detail, and in two of these the characteristic eruption of rose-coloured spots was detected; in

* In the Proceedings of the Social Science Meeting, October 1863, we find on this subject the following just remarks:—“In India, as in England, we must be moderate in eating and drinking, but we believe it is injurious to say, ‘Eat very little animal food: let your diet be chiefly farinaceous and vegetable.’ It is well ascertained that the mortality among the vegetable-eating Hindoo far exceeds that of the flesh-eating Mahommedan. One does not hear of officers eating too much, and the soldier is no more a glutton than his officer,—in fact, the character of food of the one is far less tempting to excess than that of the other.”

all, the insidious commencement of the attack, its long duration, the absence of distinct remissions, the state of the cerebral function, persistent diarrhoea, and tympanitic state of the abdomen, the tendency to relapse, and the prolonged convalescence, were, together with the general youth of the patient, pointed out as the chief phenomena which seemed to indicate the real nature of the disease, and at the same time to distinguish it from the ordinary indigenous fever of the country. In one instance the *post-mortem* examination (the only one made) revealed unequivocal evidence of the peculiar pathological changes of typhoid fever.

"In passing on to the question of the existence of this disease in the tropical parts of India, the author states that up to the year 1854, most writers on tropical diseases ignored or denied the existence of the common continued fevers of cold countries in warm climates, and he quoted to this effect Annesley, Mackinnon, Martin, etc.; even Dr. Moorehead was not inclined to admit the occurrence of typhoid fever in India at the time the first edition of his work was published; since then, however, his opinion has been somewhat modified.

"Having made a careful review of the writings of these and the older authors, Dr. Peet thought himself able to detect some instances of this form of continued fever, mentioning particularly one of Annesley's cases, and he pointed out how unfavourable the mode of treatment adopted in all fevers, at that time, was to the detection of typhoid fever, consisting as it did of large doses of calomel and frequent drastic purgatives, etc. Martin's statement of the frequent occurrence of intestinal ulceration in prolonged fevers amongst the labouring classes of natives in Calcutta was also referred to. The affection described by Twining in Bengal 'as the insidious congestive fever of the cold season,' appears to have presented, in some of its characters, a resemblance to typhoid fever; yet diarrhoea was rare, and intestinal ulceration only occasionally found after death. Twining himself admits, on a review of the symptoms, 'that they might establish a resemblance to some modification of the European typhus, although the resemblance be not strictly correct in all its details.' Dr. Peet remarked on this passage:—'These very sensible observations were written by Mr. Twining twenty-seven years ago, and I am not aware of a single observation of any value having been since made to settle the very important question to which it relates.' Recent writers differ in opinion as to the identities of the affection now referred to with typhoid fever; the author inclines to the affirmative, and in concluding this part of the subject observed that sufficient evidence had probably been adduced to render it at least probable that typhoid fever has at all times occasionally occurred within the tropics, and been confounded with remittent fever or other diseases.

"The first recorded cases of typhoid fever, as such, are by Mr. Scriven (January, 1854); they happened in Burmah, the diagnosis being chiefly based on *post-mortem* appearances. Dr. Ewart afterwards recorded four cases which occurred in the Ajmere Jail, and subsequently Dr. Goodeve has written on the subject, and satisfactorily proved the existence of the disease in Bengal. Articles by

Drs. Ranking and Cornish were also referred to by the author in proof of its existence in Madras, and also the valuable observations of Dr. Hanbury, published in the last volume of the Transactions of the Society. Passing on to the question of diagnosis, the author discussed the semeiological value of the rose-coloured eruption, the state of the abdomen, mode of invasion, long duration, and prolonged convalescence, etc., of typhoid fever; and with reference to one of its characteristic symptoms, the intestinal lesions, remarked, 'If it can be established (and I think it very probable it may be so) that Peyer's glands are not implicated in malarious fevers any more than in typhus or relapsing fever, a very important step in diagnosis will have been made.'"

The following is the concluding portion of Dr. Peet's paper published in the "Transactions," to which we must refer any of our readers who desire a clear history of typhoid fever in the East Indies:—

"From the foregoing facts it will be apparent that there is nothing in the experience of the Jamsetjee Jeejeebhoy Hospital, and but little in that of the European General Hospital at Bombay, or of the hospital of certain European corps, to warrant the inference that typhoid fever is otherwise than a very rare disease. Indeed, so far as the Jamsetjee Jeejeebhoy Hospital is concerned, it might be doubted whether it prevails amongst the class of persons who seek admission into it; for, admitting that many cases end in recovery, we should still expect to find the records at least of some fatal cases. Satisfied as I am from what I have seen out of the hospital that typhoid fever *does* exist in Bombay, I have been surprised, and somewhat perhaps disappointed, at these negative results; still, I have thought it right to bring them before the Society."

The two following communications are in further illustration of the prevalence of this fever in the Bombay Presidency:—

1. Notes of three fatal cases, returned as Typhoid Fever, which occurred in H.M.'s 56th Regiment, at Deesa. Presented to the Society by Assistant-Surgeon Longheed.

2. Cases resembling the Typhoid Fever of Europe. Recorded by Assistant-Surgeon Niven, M.D., H.M.'s 103rd Regiment.—*Trans. Med. and Phys. Soc. Bombay, No. 8, new series.*

ART. LXIII.—*Case of Typhus Fever.*

By SURGEON-MAJOR W. JOHNSTON, M.D.,
17th Brigade Royal Artillery (Madras).

Dr. Johnston observes that in India typhoid fever has, in recent years, manifested itself in different localities widely separated from each other. The records of the Artillery Hospital at St. Thomas's Mount contain well-marked cases of this disease, and there is now to be added a case of *typhus fever* in which, together with *macula*, *petechiæ* were interspersed.—*Madras Quar. Journ. Med. Sc. No. 10.*

ART. LXIV.—*A Commentary upon a Tabular Statement of the Number of Paroxysms of Malarious Intermittent Fever that occurred in 146 Medical Charges in the Bombay Presidency in the Year 1861, arranged as Data for Determining the question of the Moon's Influence upon these Fevers.*

BY HERBERT GIRAUD, M.D.,

Surgeon, Bombay Army, Professor of Chemistry and Botany in Grant Medical College.

After noticing the inquiries of Lind (1768), and those of Dr. Peet in 1843, and Mr. Day in 1846, on the influence of the moon on periodic fever, Dr. Giraud states that the want of reliable evidence on the subject having been casually brought to the notice of the Commander-in-chief Sir Wm. Mansfield, his Excellency directed that the records of the paroxysms of periodic fever should be kept in every medical charge in the Presidency, with a view to determine the question by statistical evidence.

The following are the results thus arrived at:—

"The table is a record of 56,175 paroxysms of fever, that occurred in 146 different medical charges, at 44 different stations, throughout the Bombay Presidency. It presents therefore the results of far more extended observations than have ever been brought to bear upon this question. If, therefore, it should be admitted to be sufficiently trustworthy for the purposes of induction, it must lead to the inevitable conclusion that paroxysms of malarious periodic fevers do not occur more frequently at the 'springs' than at other periods of the month. Such disproof of the moon's influence is the conclusion that has been invariably arrived at whenever observations, statistically recorded, have taken the place of superstitious belief and of general and vague impressions. It has been thus with the reputed influence of the moon on plague, asthma, hysteria, insanity, periodical hæmorrhages, and cholera. A most noteworthy instance in illustration of this occurred but a few years ago with regard to epidemic cholera, the attacks of which were very generally believed (particularly in the Madras Presidency) to be more numerous at the new and full moon than at the other lunar periods. When, however, by order of the Madras Medical Board, cases were selected from different official records, it appeared that out of 7664 cases observed, 3725 were admitted during the quarters of the new and full moon, and 3939 during the first and last quarters; leaving therefore a difference of 214 cases against the prevalent opinion. But the pertinacity with which a belief in the moon's influence is generally maintained, in spite of the opposing results of observations is not confined to its supposed relation to disease, it is equally remarkable with regard to the general belief in the influence of the moon upon the weather; for although some years ago Arago, from extended observations recorded in various parts of the world, came

to the conclusion that there exists no relation between the phases of the moon and the states of the weather, and although our own Astronomer Royal, Airey, has more recently arrived at the same conclusion from different observations, yet to this day even well-informed people confidently predicate the changes of the weather from the known dates of the changes of the moon."—*Trans. Med. and Phys. Soc. Bombay, No. 8, new series.*

ART. LXV.—*On the Treatment of Fever in the Hospitals of Vizianagrum in the Season of 1861.*

By JAMES DONALDSON, M.D.,

Madras Med. Service.

The object of the author of this paper is to test the supposed febrifuge virtues of *cobweb*, and the advantages attending on its use. The subject was first brought to the notice of the profession by Dr. Donaldson in the 'Indian Lancet,' April 1st, 1860, and he now adds the experiences of Mr. Cockerill and himself in one fever-season; the former treating all but the very mildest cases with disulphate of quinine, and the latter treating his severe cases with *cobweb* only, as far as might be possible or advisable in each case.

The following judicious remarks are made on the first two cases, which are given in detail :—

"In these two cases, a few points of interest may be noticed :—

"1st. The method of giving quinine in *small doses often* (gr. i. to grs. iii. every two hours) may be objected to by some as being insufficient; and I know well that some of my brethren, those who have served in Burmah especially, think it necessary to give scruple doses of quinine, often repeated, till the brain whirls again. Such doses may occasionally be necessary; but I would remark, that in Labuan, in 1850, while the island was still the hotbed of ague and remittent fevers, and where I had abundance of experience in the worst and most stubborn forms of fever, I found that *small doses frequently repeated* (say, grs. iii. every two hours, or grs. v. every three hours) were quite sufficient to cure all ordinary cases of fever; and that *one grain repeated every two, three, or four hours*, seldom failed to cure ordinary agues of the quotidian, tertian, or quartan type.

"2nd. It will doubtless be noticed that *cobweb* is ordered during the paroxysm of fever as well as in the intermission, while quinine is only prescribed during the absence of fever. My experience is that quinine given during a severe paroxysm of fever (and especially where there are head symptoms), not only fails of its effect and does not retard the progress of the disorder, but, if given in large doses, really aggravates all the symptoms, renders the pain and fulness of the head excessive, unbearable; and, not tending to lengthen the succeeding intermission, is at the best an expensive remedy wasted. This is the experience also, I may add, of an esteemed friend long accustomed to battle with the dangerous jungle-fevers of Burmah,

and who brought our 37th Regiment well out of a feverish place and season. Not so with cobweb; it is not only safely, but advantageously given *during* the paroxysm, and often (as I can testify in my own person) quickly and gratefully relieves the almost insupportable headache and restlessness of an acute attack; and time is gained, for the succeeding intermission is lengthened, even if the febrile attack be not altogether broken.

"3rd. As may be seen in Case I. quinine does not agree with many constitutions, and causes great nausea, even to vomiting. I never saw cobweb do this, but it often checks nausea and acts as a sedative to the irritable or excitable stomach. On the other hand, quinine is a better tonic in 'convalescence' from fevers, while cobweb is only a conservative perhaps, and preserves the strength by rapidly breaking the disease; we have no better 'preventive' than quinine, and no better tonic to aid in recovering lost strength.

"With this view, one grain of quinine was given in wine thrice daily on and after the 16th January in the first case."

The conclusions arrived at by the author are as follows:—"The above have all been extracted from among numbers of similar records, with the pre-arranged object of furnishing an example or examples of each type of the disease in which cobweb has been used. Having so used it constantly for years, I cannot disbelieve that it cures fevers, and that it cures them well and quickly, unless I could believe that some fevers will, without any apparent reason, suddenly get well of themselves, but always, by a curious coincidence, after, and *soon after*, the administration of cobweb; whilst other fevers of the same season, type, and severity, in the same place and under the same roof, not similarly treated, go on unchecked, or daily acquiring more strength. I shall only append one more case to show the good effect of cobweb administered immediately after admission in continued fever.

"CASE X.—*Feb. Cont. Communis.*

"Private Sheik Nutta, aged 39, admitted 10th June, 1860, with severe fever; pulse full, not strong; skin rough and dry, etc. Has been taking compound saline mixture.

"11th. No better; fever persists strongly without remission. Ordered cobweb gr. iv., increasing to gr. x. every four hours.

"12th. Fever stopped yesterday towards evening, and has not since returned; pulse still full. To continue cobweb.

"13th. Had a slight return of the fever yesterday afternoon, which continued part of the night; skin very harsh. Continue cobweb every second hour. R. calomel gr. ii.; Pulv. Jacobi gr. iii. *hora somni sumend.*

"14th. Much better; patient has had free perspiration and pulse is softer; no fever. Continue cobweb.

"15th. Had a little fever, he says, from ten to twelve o'clock last night; looks well now. Continue cobweb every three hours.

"16th to 20th. No return of fever, but is weakly and of weakly constitution. Omit cobweb; to take wine, with small doses of liquor quinae, twice daily for a few days.

"23rd. No return of fever; feels quite well. Arrack instead of wine.

"25th. Continues well. Discharged, with three days' convalescent leave.

"*Remarks.*—This was one of those severe fevers which I mentioned as being admitted in season 1860, after the periodical visits of pay parties to the adjacent hills; and it was peculiarly interesting to me as occurring at the same time as a very similar case, which was treated on the most approved method, but terminated fatally. This latter was carefully treated by two medical men in consultation; took calomel and James's powder; got quinine at the proper time, wine and everything that could be thought of, and the fever was subdued; but the subsequent depression was great, hydro-pericardium followed, great dyspnoea and faintness, and the patient sank.

"A careful and dispassionate attention to those cases is all I ask for, and if even a few of my professional brethren in India are thereby induced or encouraged to give cobweb a fair unprejudiced trial, I shall have attained the object in view in the publication of these remarks."

ART. LXVI.—*Treatment of Remittent Fever.*

By W. C. MACLEAN, M.D.,

Deputy Insp. and Prof. Milit. Med. Army Med. School.

With the view that the judicious method of treatment recommended by this able and experienced medical officer should be widely known, we extract the following passage from Dr. Aitken's 'Science and Practice of Medicine,' 2nd edition, p. 535 :—"I have been led to take a view of the treatment of remittent fevers, differing in some important particulars from that laid down by Martin, and those who think with him. It appears to me that he and others have been led to treat this malarial fever as if it were an inflammation. There is, no doubt, great disturbance both of the vascular and the nervous systems; and a young physician coming, for the first time, to the bedside of the patient during the exacerbation of a remittent fever, would naturally suppose his patient lost, or, at all events, that irreparable mischief would be done to the organs most exposed to this 'tempest of the frame,' unless something is done in the way of antiphlogistic treatment to reduce the force and frequency of the heart's action. But I am quite satisfied that the guiding principle of treatment in this, as in every form of malarial fever, is to counteract the poison, to prevent the recurring paroxysm; this done, the alarming symptoms subside, and the patient's constitution is not impaired by treatment, in addition to the injury it has sustained from the action of the malarial poison. By keeping this principle in view, the period of convalescence is greatly shortened. For the last twelve years or more I have never used lancet or leech in the treatment of any form of malarial fever.

"It is always, of course, advisable to have the bowels thoroughly evacuated; and if the patient is seen when his stomach is loaded, it is well to evacuate its contents by an emetic. In ardent remittents, however, there is generally little call for this, as obstinate vomiting is almost always a troublesome symptom. This done, the period of remission must be watched for, and the moment it arrives quinine, in a *full dose*, should be given,—not less than fifteen grains in the case of an adult. If the irritability of stomach be so urgent that the remedy is rejected, whilst measures must be adopted to allay it, such, for example, as alkaline remedies in combination with hydrocyanic acid, turpentine stupes, or even a blister to the epigastrium, time—precious time—should not be lost. Quinine should be given *by the rectum, in a full and efficient dose*. By mouth or by rectum, or by both, quinine in quantity sufficient to induce some of the symptoms of saturation (cinchonism), should be given before the time of expected exacerbation. According to my judgment and experience, it is bad practice to withhold quinine until an impression has been made on the force and frequency of the heart's action, from fear of increasing headache, causing congestion of organs, or the like. The impression on the force and frequency of the heart's action is best attained by arresting the paroxysm; and this is done quickly, simply, and effectually, by the early administration of quinine. I have, over and over again, had patients brought to me from the malarial quarters of the city of Hyderabad, in whom it was impossible to distinguish any period of remission,—the tongue black and dry, sordes on the teeth, the skin hot and dry, the pulse enormously quick, the intelligence feeble or gone,—all pointing to a system so charged with malarial poison as to be wellnigh overwhelmed. In such cases, quinine with concentrated beef-tea and brandy are urgently called for, and should be administered freely; and it is astonishing how men, by such energetic measures, are often snatched from impending death. I have seen in a few hours, consciousness return, a striking reduction in temperature in the *frequency* of the pulse, with a remarkable accession of force and volume, from the treatment indicated above. I do not advise, and never used, quinine in the heroic doses advised by some—I have never exceeded a scruple; but, within such reasonable limits, I have never seen it aggravate headache. On the contrary, I believe that in remittent fever,—in fact, in all forms of malarial fever with which I am acquainted, I believe quinine to be a powerful remedy in quieting the tumultuous action of the circulation disturbed by the presence of this terrestrial poison. For some years past, Warburgh's tincture has been much used in the treatment of malarial fevers in Southern India. It is a secret remedy, and therefore open to the objections very properly urged against all such remedies. It is understood that quinine enters largely into this remedy, and I do not doubt it. Be this as it may, I have given this 'tincture' a fair trial in some of the gravest forms of malarious fever, and it has also been extensively used by some of the most experienced officers of the Madras army, and I do not hesitate to say that I think it a valuable remedy. I have known it arrest at once some of the severest cases of remittent

fever; no exacerbation appearing after the second dose. It almost invariably acts as a powerful diaphoretic,—the most powerful with which I am acquainted. I have seen patients saturate, not only the bed-clothes, but the very mattress and the bedding; the patient's room and his person for days after giving out a strong odour of the medicine. For this reason it requires to be used with extreme caution, if at all, in the adynamic form of the disease. In urgent cases, I follow the practice of the American physicians. I do not wait for a remission, but give the quinine at once; and in all I am conservative of the patient's strength. I have seen violent delirium follow free leeching of the temples, and, over and over again, seen extreme and dangerous prostration follow depletive treatment, and that in cases where the violence of the disturbance indicated power; but these signs of power in the system are often most delusive, and if combated by depressing measures, we must be prepared for sudden signs of collapse. Against the system of treating this fever by saturating the system with mercury, I enter my strenuous protest. I know nothing more deplorable than the condition of a patient whose constitution, already depressed by the presence of this depressing poison (malaria), is further saturated by another, which acts as a powerful ally of the first."

ART. LXVII.—*Report on Epidemic Remittent and Intermittent Fevers, occurring in parts of Burdwan and Nuddea.*

By DR. J. ELLIOT,
Bengal Army.

This is an official Report made to Government on a peculiar type of fever which has ravaged these populous districts for some years past.

Dr. Elliot first treats of the history of the epidemic; he next reviews its causes—predisposing and exciting, the principal of which comprise all the ordinary insanitary agents which are so rife in Lower Bengal, viz. ill-selected sites of villages, on a low alluvial soil, and often surrounded by dense jungle, over-crowded houses, bad water, and tanks rendered foul by their indiscriminate use for bathing and other purposes; the absence of all drainage in villages. Dr. Elliot next considers causes arising from innutritious food, scanty clothing, the want of personal cleanliness, and the practice of sleeping on the ground. The exciting cause is considered to have been malaria. There was no evidence of contagion or infection. In its worst phases the fever may be said to have assumed a "congestive remittent type." The complications were chiefly enlargement of the spleen and liver, or both.

The most characteristic features in the symptoms were, at first, a feeling of cold about the body, while the eyes, hands, and feet were

hot and burning. This was succeeded by a severe shivering fit, and then followed the other symptoms of the cold stage, so intense in the worst cases as to lead to depression of all the vital energies; at times, great muscular prostration and rapid nervous depression supervened to such an extent that the person died without rallying.

Dr. Elliot found that quinine was of no use in the early stages, that it only increased the tendency to local congestions, and, "even in cases where there are partial remissions and the type of fever has become intermittent, there remains the same tendency to local determinations of blood, which must be overcome before quinine is administered; for this purpose, repeated blisters are the most efficacious remedies."

Directions for the treatment of the various complications are next laid down, and seem to be judicious. The mortality appears to have been very great, for there were hundreds of instances where only one solitary individual was left of a numerous family.

Dr. Elliot is of opinion that the only means to be adopted for arresting the progress of the disease, and preventing its return, is a steady and determined system of conservancy and sanitary reform in the affected villages and in their vicinity, by which such of the sources of malaria as are known to exist shall be removed. He concludes his Report by an enumeration of the measures he would recommend. It is to be hoped that recent municipal legislation in Bengal will do much to mitigate the causes of such terrible loss of life as this Report discloses,—amounting in many villages to two-thirds of the population.—*Records of Government of Bengal.*

ART. LXVIII.—*Treatment of Malarious Fever by the Subcutaneous Injection of Quinine.*

By W. J. MOORE,
Bombay Army.

"Since the year 1858, when Dr. Wood brought forward the hypodermic method of administering morphia, the plan has been extensively tried. Moreover, the results following the injection of morphia into the subcutaneous areolar tissue have, on the whole, been satisfactory, and the use of the alkaloid in this manner has now become an established practice in various obstinate neuralgic disorders. Other agents, as atropia, have also been used hypodermically with varied success, and I have latterly employed a strong solution of quinine for the cure of intermittent and remittent fever by the method of subcutaneous injection.

"The success which has attended the practice renders me desirous of calling attention to this novel mode of using quinine. I have so employed the remedy in upwards of thirty cases of intermittent fever, and in several cases of remittent, and with almost invariable success; the former class seldom requiring a second application, the

latter generally subsiding after the fifth or sixth injection. Since the period I commenced to use quinine in this manner I have been surprised and pleased to find in one of the medical periodicals that the same plan has been pursued by Dr. Chasseaud, of Smyrna, who reports 150 cures, and especially recommends the system in fever complicated with gastric symptoms, when the exhibition of quinine by the mouth is often 'inefficient, difficult, and hazardous.'

"I use the strongest solution of quinine which can be prepared, viz. thirty grains of quinine, eight or ten drops of dilute sulphuric acid, and half an ounce of water. Of this, I inject from half a drachm to a drachm, the former quantity containing some four grains of the active agent. With the exception of a little sulphate of soda if the bowels are confined, I use no other remedies whatever in uncomplicated cases of any type of malarious fever. When the spleen is enlarged, or if a leucocythemic condition is present, I prescribe, as an additional curative agent, one or other of the preparations of iron—very frequently the citrate of iron and quinine.

"I generally inject beneath the skin over the outer belly of the triceps extensor muscle, and sometimes over the deltoid. I have, however, used the syringe with equal effect on the thigh and calf, and in cases of enlarged spleen have thought the action of the remedy increased by injecting over that organ. I use a small glass syringe with the screw action, and furnished with a sharp silver point some half an inch in length. The latter is introduced beneath the integument half an inch or less, and the pain is not greater than the prick of a pin; indeed, patients have frequently declared they would rather submit to this process than taste the bitter of quinine. I have never seen the slightest inflammation or irritation follow the operation except in two instances. In one of these this result was due to the instruments employed—namely, a small trocar and common glass syringe; in the other, to quinine in *suspension* being used instead of in *solution*. Indeed, I have reason to think that quinine in suspension is very irritating to the tissues, and this is what physiology would lead us to expect, as it is certain that when a fluid material is introduced into the areolar structure, it will be absorbed more directly than any solid mass could be. Therefore, to avoid irritation of the parts, and also to prevent 'choking' of the syringe (my instrument was procured from England), I insist upon a perfectly clear solution of the alkaloid.

"The best time to inject is shortly before the expected cold fit, but it may be done during the first stage, with the effect of lessening and sometimes stopping the whole paroxysm. Latterly, when a patient presents at the morning visit, who expects an accession during the day, I have injected at the time, and nearly invariably the fever has stopped.

"In cases of remittent I have endeavoured to inject during the remission, but do not wait for this period. In severe cases the injection should be repeated at intervals of six or eight hours.

"I believe four or five grains of quinine injected beneath the integument are equal in their effects to five or six times that amount taken into the stomach; also, that the effects are more certain than

when taken in the ordinary method; and, also, that relapsing attacks are less common than when the remedy is administered by the mouth."—*Lancet*, August 1st, 1863.

ART. LXIX.—*On the Analysis of the Urine of Intermittent Fever.*

By EDWARD NICHOLSON, F.C.S.,
Staff Assistant-Surgeon, Madras.

Mr. Nicholson gives tables of four analyses of the urine of a soldier suffering from intermittent fever, and makes the following remarks on its abnormal condition:—

"The above table shows a great increase in the water, the urea, and the chloride of sodium. During the cold and hot stages the urea is nearly doubled, and the chloride of sodium is increased to five times the normal amount.

"The increase of urea is common to all febrile diseases, and the remarkable increase of water and of chlorine has often been noticed. The principal points to which I would direct attention, as bearing both on physiology and on the pathology of ague, are the disappearance of uric acid during the whole of the day, and the remarkable decrease in the amount of phosphoric acid.

"The history of uric acid is not yet sufficiently complete for me to hazard any conjectures as to the cause of its disappearance.

"But what is especially worthy of attention is the diminution of the phosphoric acid to *one-eighth* of its normal amount,—an amount which is not capricious or dependent on accidental circumstances like that of uric acid, but is regular, caused by well-defined and well-studied actions in the human body, and can be deduced from the weight of body, amount of food, work performed, physical and mental.

"The phosphoric acid in the urine proceeds from three sources—metamorphosis of osseous tissue, of muscular tissue, and of nervous tissue. Many considerations, amongst which is the great dependence of the amount of phosphoric acid excreted on the work performed by the nervous system, lead to the generally-received conclusion that by far the greater part of the phosphoric acid proceeds from the metamorphosis of nervous tissue.*

"Proceeding then, as phosphoric acid does, from the metamorphosis of nervous tissue, does not the diminution of phosphoric acid in the urine of ague show that the disease is characterized by a depression, amounting nearly to paralysis, of some parts of the nervous system? I do not wish to enter too far into theoretical considerations, as these notes are rather intended as 'memoirs to serve for

* I may also mention that I have been informed, on the best authority, that albumen prepared in a state of purity by Professor Graham's process of dialysis, does not contain phosphorus.

the history" of ague, than as proposing a pathological theory. Without being a *chimiâtre*, I believe that chemistry and therapeutics are often the best basis for pathological research, and I would observe that the pathology of the urine of ague, the cachexia, often mental as well as physical, consequent on malarious disease, and the class of remedies employed in this disease, all point to a paralysis of some parts of the nervous system. All the remedies used in ague belong to the stimulant section of the class Neurotica—wine, ammonia, zinc, chalybeates, arsenic, quinine, the vegetable bitters, coffee, and perhaps tannin."—*Madras Quar. Journ. Med. Sc.*, July, 1863.

ART. LXX.—*Quinine as a Prophylactic.*

"Again, it was not long before our men began to suffer much from illness and general depression. The climate had a very unfavourable influence upon their health, and many parts of the land being the constant abode of malaria in its most concentrated and deadly form, several of them were necessarily laid aside from utter prostration or constant fever,—a state of things in which it would be impossible to take the many precautions necessary against the enemies of all kinds that were waiting ready to assail us. Quinine was used as a remedy against the subtle, depressing, and deadly influence of the malaria. It was issued with the coffee distributed at daybreak, in which a certain proportion of it was mixed. No man was ever permitted to land without having first swallowed this simple mixture, which we considered an excellent febrifuge, and a certain quantity of biscuit with it. It was our invariable custom to muster the men on deck immediately after this light and wholesome morning meal, to pass them, as it were, in review, informing ourselves carefully as to the health and strength of each man, and then examining with equal minuteness the condition of his musket and the quantity of ammunition with which he was provided."—*Dr. Mouat's Researches and Adventures among the Andaman Islands*, pp. 90, 91.

ART. LXXI.—*A Review of the Treatment of Tropical Diseases.*

By JOSEPH EWART, M.D.,
Bengal Medical Service.

Tropical Dysentery.

Dr. Ewart commences this able and elaborate essay with a very complete *résumé* of the past treatment of dysentery, from the time of the "Father of Medicine" down to the present day. The following just remarks conclude this division of the subject:—

"An attentive perusal of the preceding review of the treatment of

dysentery will afford convincing testimony of the temporary and changing nature of every method that has hitherto been introduced, for its mitigation or cure, since the earliest periods of the history of physic. Each new system, or modification of an existing one, became popular—only to fall, more or less gradually, into decay and ultimate neglect. Is it therefore a subject for wonder that a knowledge of these circumstances should make the practitioners of modern medicine rather circumspect and guarded in accepting, without full inquiry, any innovation or revival of an old method of treatment as an improvement on the prevailing system? The experience of the past certainly teaches that it is proper to proceed carefully and cautiously in matters of this description. When, however, the physician reflects how doubtful and disappointing the treatment of dysentery has too often proved in the hands of the ablest men, he is emphatically called on to test the true value of a practice, which, to all appearance, is now doing more to mitigate the severity and fatal character of the disease than any other that has been suggested in recent times, in order that he may satisfy himself as to any superiority it may possess over the modes of management which it is apparently destined to displace. It is this consideration that renders the history of the origin and rise of *ipecacuanha*, as an anti-dysenteric remedy, of such material importance at the present time."

Dr. Ewart next gives us a succinct history of the introduction of the *Cephaelis Ipecacuanha*—a native of Brazil—and points out that it has been much employed as an emetic, and in small doses as a diaphoretic in dysentery, ever since its introduction into Europe, nearly 200 years ago. But during the past thirty years it has played a most important part in the management of dysentery, and there is strong recent testimony in favour of its almost specific effects.

"During the earlier years of the second half of this century," says our author, "physicians in tropical climates must have felt how unsuccessful were the different methods and modifications of treatment described by the systematic writers of the day. There was then a growing conviction that the general blood-lettings, astringents, purgings, narcotics, the alternate exhibition of astringents, absorbents, opiates, etc., with cathartics, or mild purgatives, etc., were not so beneficial as was desirable. Still, for want of better remedies, these means were generally adopted, till Mr. Scott Docker, Surgeon of the 2nd Battalion of the 7th Royal Fusiliers, stationed at the Mauritius, being greatly disappointed with the ill-success attending the usual mode of treatment, resolved to give large doses of *ipecacuanha* a fair trial. The results of his experimental use of the medicine are recorded in the 'Lancet,' of the 31st July and 14th August, 1858."

As evidence of the revolution in practice which the publication of Mr. Docker's views accomplished throughout India, Dr. Ewart gives, from official records, a condensed summary of the opinions of many of the most experienced medical officers in Bengal, and also in Madras and Bombay.

The superiority of the *ipecacuanha* treatment over every other is further proved by the numerical test; thus, the mortality to treated

resulting from acute and chronic dysentery combined, among European troops in the Bengal Presidency, during the forty-two years from 1812 to 1853-54, amounted to 88·2 in the thousand. But during 1860, when large doses of ipecacuanha were administered, to the complete exclusion of all others, the mortality was only 28·87 in the thousand. Almost precisely analogous results have been revealed in Madras. There, during 17 years, the ratio of mortality from acute dysentery among European troops amounted to 71 per 1000 treated. But when ipecacuanha was largely used, the ratio of mortality fell to 13·5 in the thousand. When dysentery and diarrhoea are treated as a class of disease, analogous results are obtained; the ratio of mortality in Bengal being 61·35 per 1000, while under the new treatment it was only 14·72 per 1000. Dr. Ewart therefore calculates that the decrease of mortality attributable to the substitution of large doses of ipecacuanha in tropical dysentery for the unsatisfactory remedies previously had recourse to, amounts to no less than 46·63 per 1000 treated.

We give in their entirety the following comprehensive observations on the

IPECACUANHA TREATMENT.

“In detailing the manner in which ipecacuanha is recommended to be employed, I may premise that, in the following observations, attention is very much confined to its use as the principal remedy for acute dysentery. It has not been deemed advisable to swell this paper with a full account of all the subsidiary means required to meet special symptoms as they may arise during the progress of any case. The selection, mode, and time of having recourse to the minor alleviative and curative measures must be left to the judgment and discretion of the practitioner.

“1. Should an aperient be required in the congestive, exudative, or ulcerative stages of acute tropical dysentery, or in sudden relapses supervening upon chronic forms of the disease, the readiest, simplest, and most painless, is the administration of a tepid-water enema of from two to four pints. As the capacity of the colon is greater in some individuals than others, the maximum limit may occasionally be exceeded. A Hare's, Reade's, or other approved enema apparatus may be employed to pump up an adequate quantity of fluid. The facility with which the colon receives an injection increases with the distance the tube may have been inserted into the sigmoid canal; but our object may be effected by introducing an elastic tube about six or seven inches into the rectum. The immediate effect of the passage of the first portion of the injection is to soothe the irritability of the intestine and to diminish pain. The result of a sufficiency having been thrown up is a feeling of slight uneasiness, succeeded by a desire to empty the bowels. When these sensations are experienced, the tube should be carefully and slowly withdrawn, and the patient instructed to exercise a certain amount of control over the evacuation of the contents of the intestine, in order that they may escape as gradually as possible, and the feeling of depression or exhaustion sometimes following the

instantaneous expulsion of several pints of liquid and solid matter may be mitigated or prevented. The preparation of the clyster, its administration, and the cleansing out of the colon, should not occupy more than from ten to fifteen minutes. But it will very frequently be found advantageous to save even this brief period of time; because, when the majority of cases come under observation, it generally happens that no good can be produced by the injection that is not equally well accomplished by the main remedy—*IPECACUANHA*.

"2. After the operation of the enema, or immediately the patient presents himself suffering from any of the dysenteric conditions already mentioned, in those cases, where no preliminary aperient is indicated, a turpentine epithem or mustard plaster should be applied to the epigastrium, and from half a drachm to a drachm of the *ipecacuanha* powder, suspended in two drachms of syrup of orange-peel with four drachms of water, or in half an ounce of infusion of camomile with ten grains of carbonate of soda, or five grains of the trisnitrate of bismuth, should be simultaneously administered. Every minute gained in introducing the medicine into the stomach is an advantage appreciated by every one who has largely used it in dysentery. To wait twenty minutes, until the counter-irritation is established, is simply to give the disease so much advance as to time, and proportionately to diminish the chances of success. Moreover, when the counter-irritant and *ipecacuanha* are both brought into action at the same time, the former almost invariably takes effect and produces all the counter-irritation it is capable of, before the latter begins to cause the slightest feeling of nausea.

"3. After the patient has swallowed the *ipecacuanha*, he should occupy the recumbent posture, with the head lying at a lower level than is customary. He should be directed to refrain from drinking liquids for an hour or two. If, however, the desire to quench thirst prove irresistible, small pieces of ice may be sucked or swallowed, or, in localities where this luxury is not procurable, cold water, in teaspoonfuls, given at intervals, may be allowed. Vomiting should be resisted to the utmost. Nausea will probably occur; perhaps, in some cases, retching and vomiting. But as the vomiting is exceptional, and, when it does occur, seldom happens before the lapse of an hour from the administration of the large dose, and as no tepid water has been swallowed so as to provoke and promote emesis, the vomited matter generally consists of small quantities of gastric and mucous secretion, with or without a trace of the *ipecacuanha*. Hence the rule is, that when vomiting does happen, only an insignificant portion of the dose is actually rejected. If, however, the practitioner or nurse, after examination of the rejected matters, has reason to believe that the whole or the greater part of the drug has been expelled, there should be no hesitation in repeating the dose as soon as the stomach appears to be in a proper state for its reception.

"4. Provided a full dose of the medicine has been retained, it is advisable to wait eight or ten hours before repeating the *ipecacuanha*, when ten, twenty, or thirty grains—usually a scruple—should be

exhibited every four, six, or eight hours, according to the urgency of the case or the manner in which the stomach tolerates its presence, until the tormina, tenesmus, sleeplessness, mucous, slimy, bloody stools, and functional derangement of the whole digestive system are succeeded by relief from pain, refreshing sleep, feculent, or what are termed bilious evacuations, and a speedy restoration of the primary processes of assimilation. It will be found beneficial to time the large doses, so as to allow of thirty grains being given at bed-time and a scruple in the morning, so long as their use is deemed necessary.

"5. If no disorganization of the intestinal mucous membrane has taken place, the above changes frequently happen after the first or second large dose of ipecacuanha; and even if ulceration has set in, they are generally discerned on the second or third day after it has been commenced. In either case, it is necessary to discontinue the medicine when the disappearance of tormina, tenesmus, the absence of mucus, blood, and slime from the stools indicate that the cessation of the dysenteric process has been effected, and that the affected portions of bowel have been placed in the most favourable condition to undergo cure by 'resolution,' if the morbid action has not advanced to the stage of ulceration, or by the necessary processes of 'granulation and cicatrization,' if sloughing or ulcerative destruction of the mucous membrane has already taken place.

"6. In those cases where no ulceration exists, convalescence is speedy and complete in a few days, without any extraordinary care as to diet, though it is well to caution the patient against all irregularities in this respect. When ulcers are to be healed up, ferruginous and bitter tonics, and an easily digestible and nutritious diet may be allowed. If required, the large intestine should be gently washed out by a tepid-water enema. The direct application of astringent and stimulating remedies, in the form of enemata, should not be neglected, particularly when the ulcers are situated in the rectum or sigmoid flexure. Should acute symptoms reappear, the large doses of ipecacuanha must be resumed and persisted in, until the re-excited dysenteric inflammation is checked, and the ulcers are disposed to granulate and cicatrize, when the conservative treatment and nutritious diet may be recommenced without delay.

"7. Opium by the mouth is not necessary. It may be employed, in appropriate cases, in the form of small enemata or suppositories to alleviate the distress arising from tenesmus. When swallowed, it 'locks up' the secretions of the liver, pancreas, and alimentary mucous membrane, rather favouring than reducing the inflammation in the intestinal mucous membrane. These bad effects quite counterbalance the benefits derived from the sleep, diminution of peristaltic action, rest to the inflamed gut, and temporary decrease of tormina and tenesmus consequent on narcotism. This explains why the real character of the disease is often completely masked by opium, and why apparent amendment is taking place whilst the destructive ulceration and sloughing of the mucous membrane is rapidly extending. As ipecacuanha speedily brings about all the good, without any of the evil effects of opium, this narcotic, in any form, with the exceptions adverted to, is not only superfluous, but injurious.

"8. There is less objection, however, to uniting the ipecacuanha with such remedies as are acknowledged to possess the power of lessening the irritability of the stomach and of increasing its tolerance of the drug, without interfering with the functional activity of those organs whose secretions we are endeavouring to promote, with a view to rectify the disturbed balance of the portal circulation. On the contrary, medicines of this order may perhaps be associated with ipecacuanha with benefit—such as carbonate of soda, bismuth, and, possibly, chloroform, camphor, and hyoscyamus.

"9. The above outline of treatment is that which is usually applicable, but the dose and the repetition of the same must be regulated, according to circumstances, in special or exceptional cases. It must, however, be borne in mind that all other remedies that have ever been recommended for the cure of dysentery are of secondary importance, compared with ipecacuanha; and that during the congestive, exudative, and ulcerative stages of the acute form of that disorder, as well as in the acute relapses supervening upon chronic dysentery, every reasonable effort should be made to induce the stomach to tolerate and pass onwards the doses mentioned.

"10. When dysentery occurs in pregnant women, large doses of ipecacuanha are not contra-indicated; because, if the disease be allowed to proceed (which is more likely to happen under the old than the ipecacuanha treatment), abortion or premature labour is almost certain to follow; and when such a complication supervenes in the latter months of gestation, the mortality almost surpasses that of any other disease. When the dysenteric inflammation is summarily put a stop to by the ipecacuanha, abortion or premature labour is prevented. Under the opiate method of management, premature labour is not averted, but, in the majority of cases, occurs at the acme of the disease, when the sloughs are being thrown off; and the woman succumbs to the conjoint shock to the system. In dysentery complicated with pregnancy, opiate enemata, to relieve irritation in the rectum, are more essential and permissible than under other circumstances.

"11. In the acute dysentery of children, ipecacuanha is invaluable. For a child of six months a grain, and for a child of one year two grains, should be given with an equal quantity of carbonate of soda, two or three times a day, until the tormina, tenesmus, slimy and bloody stools are replaced by freedom from pain and feculent evacuations. It will not always be necessary to continue the drug beyond two or three days at a time. But it should be recollected that the disease adheres with greater tenacity to children than adults; and although we observe that ipecacuanha has an immediately beneficial effect in diminishing the blood, mucus, slime, and frequent stools, still we find that dysenteric or slimy motions with undigested food continue to pass. In that case, the ipecacuanha combined with chalk, bismuth, or carbonate of soda should be repeated, once or twice a day, for a certain period, till healthy evacuations are restored. In children, the gums must be lanced when necessary; turpentine liniment with fomentations, or turpentine stupes alone, may be applied to the abdomen; weak chicken-broth

or arrowroot should be substituted for milk ; and, above all, food must be given, in small quantities at a time, and at regularly stated periods. From the age of one year the dose is regulated by adding one grain for each additional year of age up to eighteen, when the doses already indicated for adults should be employed. In children, a full dose at night, and a smaller one in the morning, will often succeed in effecting a rapid cure.*

"12. In cases where evident malarious taint pervades the system and complicates acute dysentery, disulphate of quinine is indispensably necessary. A scruple of the antiperiodic will be most speedily absorbed, if dissolved in water acidulated with sulphuric acid, and it may precede by an hour the first dose of ipecacuanha. Ten-grain doses should afterwards be given midway between the large doses of ipecacuanha, and, if possible, during abatement of any periodic febrile excitement which may exist, until the feverish symptoms have been subdued. Quinine here is as important as ipecacuanha, for until it has successfully checked the disturbing influence which malarious poisoning exercises upon the capillaries of the portal and general circulatory systems, the good effects which ipecacuanha produces are only temporary and incomplete. The mildest febrile exacerbations of a miasmatic origin re-excite dysenteric action, and thus undo the good that the ipecacuanha has effected. Hence the urgent necessity for removing, without delay, every vestige of masked or active malarious fever complicating the dysentery. No medicine enables us to accomplish this object so safely and so quickly as the disulphate of quinine in large doses.

"13. In purely chronic dysentery, ipecacuanha cannot be expected to do the same amount of good. In acute attacks, however, super-vening upon chronic dysentery, it certainly appears to prove beneficial.

"14. When the ipecacuanha fails to preserve the life of the patient, its failure may generally be attributed to—

- "(1) Co-existence of abscess of the liver.
- "(2) Unchecked aguish or malarious poisoning.
- "(3) Irretrievable constitutional cachexia.
- "(4) Addison's disease of the supra-renal capsules.
- "(5) Bright's disease of the kidneys.
- "(6) Phthisis or tuberculosis.
- "(7) Strumous disease of the mesenteric glands.
- "(8) Permanent enlargement of spleen or liver.
- "(9) Peritonitis with or without perforation of the gut.
- "(10) The existence of extensive sloughing."

HOW DOES IPECACUANHA ACT?

"15. Piso, more than two hundred years ago, believed that ipecacuanha removed the viscid and corrupt humours by the vomit-

* I have the authority of Dr. T. M. Wilson, Professor of Midwifery at the Calcutta Medical College, for stating that the above graduated scale of doses is quite in accordance with that observed by himself in his own practice.

ing and purging it produced, and that it was also a derivative and astringent. He says, 'Quippe præterquam quod tuto et efficaciter tenacissimos quosque humores per ipsum alvum, sæpissime autem per vomitum, ejiciat, et a parte affectâ derivet, vim quoque astrictivam post se relinquit.*' Dr. Friend ascribed the chief power of ipecacuanha over dysentery to the diaphoresis following its administration. He remarks, 'Radix ipecacuanhæ, præter vim vomitoriâ quam obtinet, uberrimum sudorem excitare solet. Atque in hoc, quantum ego conjecturâ assequi possum, præcipuè consistit egregia illa in dysentericis affectibus virtus, quam sibi præ aliis vomendi instrumentis vindicat.†'

"16. Ipecacuanha, in large doses, appears to stop the *inflammatory action* in the large intestine by augmenting the secretions of the alimentary lining membrane from the œsophageal orifice of the stomach to the rectum, by increasing the flow of bile and pancreatic juice, by operating as a purgative without irritating the inflamed or ulcerated surfaces, by lessening peristaltic action and producing rest, by decreasing the frequency and force of the pulse, and by promoting diaphoresis.

"It restores the lost balance of the *portal circulation* and removes the strain put upon the diseased tissue, by exciting general DIAPHORESIS by acting as a direct SEDATIVE upon the heart, thereby reducing the force and frequency of its beats, and by expending the principal part of its PURGATIVE AND EVACUATING INFLUENCE upon the secreting structures of the stomach, duodenum, pancreas, liver, and small intestines, the remnant of its power being exerted upon the secreting glands of the large intestine.

"It relieves *tormina and tenesmus*, affords rest to the parts affected, and thus secures refreshing sleep to the patient, partly through the effects just detailed, and partly by acting as a *direct SEDATIVE* upon the muscular fibres of the cæcum, colon, sigmoid flexure, and rectum. It may be questioned whether the nausea and emesis sometimes following its administration are beneficial *per se*. The nausea may, however, be disregarded, as it does not interfere with the action of the remedy, and prevents the desire to indulge prematurely in articles of diet, which might prove prejudicial.

"17. In fine, ipecacuanha, in large doses, may be said to fulfil many important indications. It produces all the benefits that have been ascribed to blood-letting, without robbing the system of one drop of blood; it produces all the advantages of mercurial and other purgatives, without their irritating action; it produces all the good results of antimonials and sudorifics, without any of their uncertainty; and it produces all the beneficial effects ascribed to opium, without masking, if not aggravating, the disease, whilst the mischief is silently accumulating within. Thus, it may be said that we possess, in ipecacuanha, A DIRECT AND SAFE ANTIPHLOGISTIC, A POWERFUL SUDORIFIC, AN UNIRRITATING PURGATIVE, A CERTAIN CHOLAGOGUE, A PANCREATIC STIMULANT, AND A HARMLESS SEDATIVE to the heart

* Quoted from 'Diseases of the West Indies;' by Richard Towne.

† Op. cit.

and muscular fibres of the large intestine. I can give no better explanation of the manner in which this medicine operates; but those who search deeper will not fail to perceive that much remains to be elucidated before the true physiological action of the remedy can be fully understood.

"18. The advantages of the 'ipécacuanha treatment' in the congestive, exudative, and ulcerative stages of almost every form and type of acute dysentery, as well as in the acute attacks supervening upon chronic dysentery, may be briefly stated to consist in—

"(1) Its simplicity.

"(2) Its safety.

"(3) Its certainty, compared with any other method.

"(4) The promptitude with which the inflammation is stopped.

"(5) The rapidity with which recovery takes place.

"a. By resolution.

"b. By granulation and cicatrization.

"(6) Conservation of the constitutional powers.

"(7) Abbreviation of the period required for convalescence.

"(8) Decrease in the frequency of chronic dysentery.

"(9) Decrease in the frequency of abscess of the liver.

"(10) Diminution of mortality to cases treated—all of which are accomplished,

a. Without local or general blood-letting.

b. Without salivation.

c. Without calomel and irritating purgatives.

d. Without opium by the mouth.

"19. The objections which have been advanced against large doses of ipécacuanha in dysentery are—*first*, its 'depressing influence,' kept up by nausea and vomiting; and, *secondly*, that it is liable to set up 'uncontrollable vomiting.'

"*1st Objection.*—The depressing power, nausea, and vomiting have all been over-estimated. Nausea is only a temporary and evanescent effect. Vomiting is an exceptional occurrence, and even when it does supervene, it seldom lasts long. As much nourishment, therefore, as may be required to support the strength, can be allowed in the intervals between the large doses of ipécacuanha. But, what contributes more to the conservation of the patient's stamina, and to the prevention of depression or asthenia, is the speedy cessation of the dysenteric process accomplished by the drug, followed by refreshing sleep, and the power of digesting and assimilating nourishing food. Such remarkable results as these soon reconcile any patient suffering from dysentery to an otherwise disagreeable remedy.

"*2nd Objection.*—When uncontrollable sickness and vomiting succeeds the employment of this medicine in the manner already described, the existence of one or other of the serious diseases enumerated in paragraph 14 may be more than suspected. In the absence of these complications, unmanageable vomiting is seldom, if ever, witnessed. Hence, in a preponderating majority of the cases of dysentery observed in this country, this objection is untenable. The truth is, that every physician who has used ipéca-

cuanha in heroic doses soon learns that depression of the vital powers is not to be feared, and is surprised at the small amount of vomiting that follows its administration, and at the unexpected ease with which the stomach tolerates its presence."—*Indian Annals Med. Sc.* No. 16.

ART. LXXII.—*Remarks on the Hæmostatic Treatment of Cholera, Hæmorrhage, Exhaustion, etc.*

By T. A. WISE, M.D., F.R.S. Edin.,
Bengal Army, retired.

When in India, Dr. Wise had on one occasion a regiment prostrated with fever placed unexpectedly under his charge, and as he had but a small supply of quinine, and could not obtain more, he employed tourniquets to intercept the blood in the extremities, and with a degree of success that induced him to publish the results in M'Lelland's 'Journal of Natural History,' Calcutta. He afterwards extended the application of this powerful remedy to other diseases, and proposes in this paper again to bring the subject under the notice of the profession.

We may assume as nearly correct, that the quantity of blood in the whole body is about 28lbs., and that in ordinary health there is about 2lbs. weight in each of the four extremities.

The attack of an intermittent disease is accompanied with a congestion of blood in certain organs, and as we have complete control of at least 1lb. of blood in each limb, may we not act on this with great advantage in the cure of disease? The circulation may be controlled in two ways,—1st, by retarding the blood in veins, and 2nd, by stopping the circulation in arteries.

To retard blood in the veins of a limb as a therapeutical agent.—In patients with the premonitory symptoms of apoplexy, in severe cases of dyspnoea, in some organic diseases, and even in inflammation of particular organs, the temporary withdrawal of a certain quantity of blood from the general system, and its retention in the extremities, may sometimes be used with great advantage. It is easily accomplished by the application of a field-tourniquet upon one or more extremities.

Stopping the arterial circulation in a limb.—It must not be supposed that a clamp, or horse-shoe tourniquet, when compressing the chief artery of a limb, acts merely on the part by stopping the circulation—it powerfully affects the whole system.

Secondly, As many diseases are local, are connected more or less with local congestions of blood, which generally produce the pain and derangement of the functions of the affected organs, by so closing a portion of the circle you thus enlarge the volume of the blood, and increase the force of the heart, which has a most powerful influence in removing local congestions in the internal organs. It is not, how-

ever, in every case that the treatment can be employed with the same good effect. It is in the large class of functional diseases that the partial stoppage of the circulation is of so much permanent use; and even in some organic diseases it may be employed with advantage by withdrawing so much blood from the circulating system of the part. By thus placing a ligature so as to press upon the chief artery of one or two extremities, the general mass of blood circulates through a smaller circle, and in some diseases produces a powerful tonic or stimulating effect upon the general system.

In those sudden and appalling cases of uterine hæmorrhage the effect is very marked, and the fatal result is often arrested by this prompt and energetic interference. . . . In the collapsed stage of cholera, the application of the tourniquet affords, in many cases, the only chance of cure. It immediately removes the cramps, and produces the same equalizing effect as blood-letting, without the debility caused by this evacuation. It likewise increases the volume of blood, which stimulates the heart to increased action, removes morbid congestions, and changing the morbid distribution of blood from the secreting surface of the alimentary canal, sets up a new and salutary action in their place. It thus affords the most ready and most powerful means of rousing the system.

The tourniquet may be applied to two or to the four extremities, according to the effect intended to be produced. When the individual is weak and the collapse great, more care is required in emptying, by friction, the blood in the veins of the extremity to be bandaged, and the effect will be more marked if the tourniquet be applied to four extremities. It may be kept on for hours, or even for a day or two. When reaction has taken place, by relaxing cautiously one or more of the tourniquets so as to allow the blood to flow to the extremities, it afforded a ready means of relief. In our author's experience no bad effects have followed the use of the tourniquet. When reaction has taken place the pressure of it is complained of, and much care is required to prevent the patient loosening them. If it be done too abruptly, the blood spreads over the extremities, and the patient sinks, as occurred in two cases cited.

Dr. Wise next gives a series of cases of cholera in which tourniquets were used successfully, and in which medicines in all probability would have been given in vain. In concluding this very interesting paper, our author states that the following conclusions "may be deduced as to the use of the tourniquet in the collapsed stage of cholera, in exhaustion, etc.:—

"1st. By its obstructing the circulation, it immediately stops the distressing cramps of the extremities in cholera.

"2nd. By increasing the quantity of the circulating fluid in the trunk, and thereby stimulating the heart's action, it removes morbid congestions, stops the secretions from the bowels, increases the animal heat, and powerfully tends to restore health.

"3rd. By improving the vigour of the system, medicines act more powerfully and in a more salutary manner in removing morbid actions.

"4th. When the reaction has taken place by loosening the tour-

niquets with care, the determination of blood to the internal parts is diminished by its diffusion over the extremities upon which the tourniquets had been placed. They are immediately to be re-tightened when there is any coldness or weakness experienced, or any tendency to relapse. This must be most carefully watched for, and prevented.

"5th. By increasing the volume of blood in the contracted circulation, the force of the heart is increased, local congestions are removed, and the whole system is strengthened."—*Dublin Quar. Journ. Med. Sc., August, 1863.*

ART. LXXIII.—*Report on an outbreak of Cholera occurring amongst the Prisoners in Calicut Jail, in March, 1863.*

By ROBERT E. PEARSE,
Madras Army.

During this outbreak there were in all, admissions, 140; deaths, 91, or 65 per cent.; recoveries, 49, or 35 per cent.; deaths up to 27th, 72·41 per cent.; deaths subsequent to 27th, 29·16 per cent.

In the greater proportion of the cases the collapse was sudden and extreme, and occurred often a few minutes after seizure; the evacuations becoming involuntary, and apparently the clear, watery, colourless serum of the blood. Cramps were almost entirely absent. The outbreak reached its climax on the 27th, after which the cases became milder. On the 26th, of 7 admissions, every one proved fatal.

Mr. Pearse assigns the causes of this epidemic—*insufficient food and over-crowding*. As indications of the first, he mentions the prevalence of a scorbutic taint among many of the prisoners; and as grounds for the second, he states that allowing only 350 cubic feet per man, the jail can accommodate only 274, whilst on the night preceding the outbreak the actual number was 419, or 145 in excess of the highest estimate compatible with health. The ventilation also was very bad.—*Madras Quar. Journ. Med. Sc., July, 1863.*

ART. LXXIV.—*Note on the peculiar Evacuations sometimes noticed in Epidemics of Cholera.*

(Extracted from the *Annual Report of the Jamsetjee Jejeebhoy Hospital for the year 1862.*)

In 17 cases the stools were of a pink colour, and of these not one recovered. Partial transudation of the colouring-matter of the blood appears to be the cause of the pink colour.

"Microscopic Examination of the pink-coloured Stools of a Cholera patient, Jamsetjee Jejeebhoy Hospital, December 19th, 1861.

"The consistence was like that of pea-soup; reaction, neutral to test paper; a portion of the brick-red opaque mucus was examined, and in it were found much granular matter; many forms of vegetable cells; epithelial cells, principally columnar; oil globules; numerous quaternate clusters of *sarcina ventriculi*; and several red blood corpuscles, generally aggregated, occasionally separate.

"To these last, as well probably to a more diffused stain from exuded hæmatine, was the red colour of the stools apparently owing.

"The mucous membrane of the small intestines was examined in several cases; where the stools had been pink, it was unusually red, and the solitary glands in a marked manner prominent."—*Trans. Med. Phys. Soc., Bombay*, No. 8, New Series.

ART. LXXV.—*Cholera, Disinfecting Treatment of.*

Dr. Mackay, in the 'Madras Quarterly Journal of Medical Science,' for April, 1863, directs attention to the successful treatment of several successive cases of cholera by liq. calcis chlorinat. in doses of 20 grs. to 31 in one drachm of water given repeatedly by the mouth, while small enemata (31 liq. calc. chlor. to 3iv. water) are at the same time administered. It seems to act as a powerful stimulant, and is generally retained.

The floor of the hospital ward was at the same time frequently sprinkled with chloride of lime, thus keeping up a continuous exhalation of chlorine gas, which must have been inhaled by the patients. The surface of the patient's body was sponged with a tepid lotion composed of Norton's deodorizing fluid. The chloride of lime was also put into the close-stools, and the evacuations were at once carried away and buried underground.

ART. LXXVI.—*Remarks on the Treatment of Cholera by Turpentine.*

By SURGEON-MAJOR J. W. MUDGE, M.D.,
Madras Army.

For more than twenty-two years Dr. Mudge has seen cholera prevailing under every variety of circumstances, and has witnessed all sorts of treatment; the mortality, however, maintained for the most part a terribly steady ratio. About 51 per cent. recovered, and 49 per cent. died. In August, 1861, having met with a number of fatal cases, he determined to place no further reliance on any of the remedies he had hitherto used. The primary feature of Asiatic cholera is serous discharge from the bowels, or serous hæmorrhage of a

passive nature. Sugar of lead acquired a certain reputation in checking this, but it seems questionable if so powerful a sedative is suitable in a malady marked by excessive depression. Dr. Mudge proceeds:—

“Thinking over other remedies which are known to be valuable in checking internal hæmorrhage, turpentine presented itself to me as the most likely to fulfil most of the conditions required. Its effects, in hæmatemesis, hæmaturia, and certain forms of hæmorrhage from the bowels, are undoubted. It is, moreover, carminative, stimulant, and diuretic; it is rapidly taken up, and though apparently producing a constringent effect on the exhalents of the mucous surfaces, has no tendency to produce constipation. Being satisfied with the consideration of all these points, I resolved to give turpentine a fair trial. With a view to combining a certain amount of nutriment with it, and to present it to the stomach in connection with an animal substance (a point on which the efficacy of the minute quantity of iodine in cod-liver oil is supposed particularly to depend), I directed it to be beaten up with yolk of egg; a small quantity of camphor as an anodyne was added to each dose, with a little tincture of lavender and cinnamon water as the menstruum.

“The exact prescription is as follows:—

℞ Ol. Terebinthinæ ʒ ss.
Vitell. Ovi No. ii.
Camphoræ gr. viii.
Tinct. Lavandulæ ʒ ii.
Aquæ Cinnamomi ʒ iiiss.
M.

F. Mistura.

“One-fourth part for a dose every hour, if retained, or oftener, if rejected.

“For children the dose is graduated according to age.

“Vomiting is rarely produced. Large draughts of fluid are avoided.

“The above treatment has been carried out steadily in the Vepery Hospital since September, 1861. A register of the cases has been kept and the results are shown below.* Four doses have generally been found sufficient to check the serous stools: the bowels however still continue to act in most cases, the dejections becoming scanty, sometimes gelatinous, but gradually assuming a fæculent character. The urinary secretion is often restored after a few hours. In a good many cases there has been a tendency to coma; to relieve this, blisters have been applied to the nape or head, and the free use of chlorate of potassa, in five or ten grain doses every hour or oftener, has been found successful. This coma appears due to exhaustion and to the abnormal condition of the blood, deprived, to a large extent, of its saline constituents. The heart, weakened by nervous depression, loses much of its propelling power, and venous congestion is the consequence.

“Purgatives which are ordinarily exhibited in such cases rarely ef-

* Total treated, 69; recovered, 42; died, 27.

fect any good, and, indeed, seldom act at all. The common inference is, that the patient is lost because the bowels could not be got to act. It appears to me that this is altogether an erroneous theory, and that watery stools, if induced, would only make matters worse. Chlorate of potassa, from its oxygenizing, stimulant, and diuretic properties, has been found the best remedy."—*Madras Quar. Journ. Med. Sc.*, April, 1863.

ART. LXXVII.—*Cholera in Bengal.*

1. In Lower Bengal, cholera may be said to prevail more or less amongst the natives, in one part of the province or other, twice a year; namely, at the close of the rains in October and November, and in the months of March and April.

2. The borders of the great jheels extending from Rajshaye to Sylhet, appear to be the localities to which it clings at these seasons.

3. In the extreme North-West and Punjaub it is usually confined, in its pseudo-epidemic form, to seasons of heavy rain, and especially to those parts where the drainage is defective; and the soil, composed of clay, corresponds with that of the marshy localities in the Lower Provinces, where the disease is more constantly present.

4. It is not to be inferred from this that marshy or undrained ground is all we have to guard against with reference to these epidemics, although the disease is well known to be endemic in the humid climate of the marshy parts of Lower Bengal.

5. It is remarked when cholera appears in Meerut, it chiefly occurs in localities formed of clay.

6. Other localities are observed at Meerut to be more exempt from cholera than barren spots composed of clay. The superficial clay is covered, in the old Native Cavalry and Infantry lines, by a bed of light drift-sand, which forms the common soil, and gives from a foot to two or three feet or upwards of additional elevation to the surface, affording at the same time a light dry soil, very favourable for every kind of cultivation, as well as the growth of trees, while the other parts of the station are barren.

7. The influence of soil in modifying the effects of outbreaks of cholera is also shown by the results of experience at Umballa, as well as at Meerut. The same question is further illustrated by the influence of different encamping grounds on the health of troops—a surface bare, devoid of cultivation and of trees, composed of clay, being invariably more unhealthy than one where the soil is good and the country well cultivated and wooded.

8. Bogra (a large native place), which stands on laterite—a red clay which underlies alluvial deposits—is exempt from cholera.

9. Cholera when once established assumes an epidemic form, and travels slowly by means of persons brought in contact with the sick.

10. Outbreaks of cholera are found to recur at given dates in certain places, in a manner altogether incompatible with the rules of contagion.

11. Those great outbreaks which take place in the North-West Provinces and Punjaub appear chiefly in seasons of excessive rain, and then only in certain localities, under circumstances not to be accounted for otherwise than by independent causes, arising from peculiar local conditions combined with epidemic influence.

12. The influence of winds was in some outbreaks very marked; thus, during the epidemic of 1856 at Mean-Meer, it is stated that when the wind was from the south-east the disease was very intense, but as it veered towards the north the disease lessened, and disappeared when the wind passed round to the west.

13. It is, however, more than probable that the effects here ascribed to winds are due also to the position of privies, stables, and the like, which, both at Mean-Meer and Umballa, are placed to the east of barracks and hospitals. Mooltan is placed on a light sandy soil, and appears hitherto to have been exempt from visitations of cholera.

14. Those portions of the stations of Meerut and Umballa which are composed of a dry sandy soil, probably like Mooltan, are exempt from cholera; while other parts of the same stations, where the surface is composed of clay, like that of Mean-Meer, suffer more or less severely in every epidemic.

15. All this points most explicitly to soil and drainage, although other influences and circumstances doubtless have their effect in bringing about and aggravating the calamities under inquiry.

16. A rule should be laid down for the first body of men affected to move into camp at once, taking the sick of the disease under treatment with them.

17. The influence of privies was very marked. Thus, at Meerut, of 5 cases which occurred in No. 9 barrack, 3 were taken from the south end, adjacent to the corresponding privy. In No. 8 barrack 2 cases occurred, both in the corner adjacent to the privy. Of 10 cases which occurred in No. 4 barrack, 8 were taken from the end of the building next the privy. Of 4 cases in No. 6 barrack, 3 men were taken ill in the end corresponding with the privy. Of 5 cases in No. 5 barrack, 4 were sent to hospital from the south end of the barrack, adjacent to the privy.

18. The influence of stables, when placed to windward of barracks, was marked in a less degree only.

19. It was observed that one-third of the cases of cholera occurred in the corners of barrack-rooms and hospitals.

20. The high reputation of Meerut as a station for European troops appears to depend on the barrack-privies being placed to leeward as regards prevailing winds.

21. Contrary to what might be expected, westerly winds were more prevalent during the years of epidemics than in healthy years. But in the cholera months of July and August, easterly winds are greatly in excess of others, more especially during periods of epidemics.

22 At Mean-Meer, the barracks which suffered most are those where the drainage is most defective.

Here also, and at Gwalior, it was noticed that occupants of small

rooms are more liable to the disease than those of large barrack-rooms.

23. There was a marked effect in the treatment of premonitory symptoms in checking the extent and virulence of the disease.

In cholera epidemics, hospitals should be cleared of all ordinary cases, which should be treated for the time in barracks, where medical inspection parades should be held twice daily at the usual time of roll-call, so as to fatigue the men as little as possible.

24. The influence of privies is everywhere bad, and the amount of privy-sittings to strength is often unnecessarily and injuriously high; thus at Gwalior it ranges from 10 to 36 per cent.

25. 3 per cent. to strength ought to be made the standard of privy accommodation, as that has been proved by experience in Fort William to be sufficient for European troops in India.

26. The conservancy of privies should be conducted independent of carts. The filth should therefore be removed at once, without any shifting from the original vessels, in which it ought to be carried to trenches and buried, where the vessels are to be washed, and returned clean for use. Suitable vessels for privy use are glazed earthen *gurraks*, of hour-glass shape, which may be made up in the jails and bazaars in all parts of the country.—*Extracts from the Notes of Inspector-General J. M. Lelland, M.D., appended to Cholera Report.*

ART. LXXVIII.—*Some Account of the Cholera Epidemic of 1861, as it appeared at Vizigapatam, Madras Presidency.*

By JAMES DONALDSON, M.D.,
Surgeon, Madras Army.

The object of Dr. Donaldson's paper is to communicate to his professional brethren the successful results in his hands of the treatment of cholera by strong diffusible stimuli—chloric ether, and aromatic spirits of ammonia. After narrating the history of this outbreak, and expressing his utter want of confidence in the routine modes of treatment, our author says:—

"In discussing the following cases of cholera treated in the garrison hospital, I would have it plainly understood that only *genuine, unmistakable cases* are alluded to. . . . Of 18 cases of true malignant cholera, treated in the garrison hospital during my tenure of the charge in June and beginning of July, 6 only died, and the remainder recovered without any subsequent bad symptom, and with no tardy convalescence, but, on the contrary, with a speedy return to the usual state of health. Of several apparently hopeless cases in the 38th Regiment, not one died; and amongst a number of native followers who came promptly for treatment, none suffered more than a temporary and unusually short illness; the danger once passed, and the 'shock' recovered from, recovery was rapid."

Thirteen cases are appended, with the view of portraying the nature of the malady and the treatment employed. To adults were given, on admission, chloric ether and aromatic spirits of ammonia, of each half a drachm, in camphor mixture, every twenty minutes; chalk mixture, or tincture of catechu, or solution of muriate of morphia was occasionally added, and weak brandy-and-water allowed as a drink. The usual external means was employed, such as sinapisms, turpentine stupes, hot bottles, dry and moist frictions. To the question, To what was the recovery of so large a portion owing? Dr. Donaldson makes the following reply:—"Was it, then, opium which produced the desired effect? No. Opium was also carefully avoided, and only given in the form of solution of muriate of morphia, when the alvine dejections were unusually great, or when there was unusual restlessness and inability to sleep, after the collapsed stage was fairly passed. It could not be the hydrocyanic acid, which was only added when vomiting was more than usually severe. There remained but 'chloric ether,' 'aromatic spirit of ammonia,' and 'tincture of catechu,' commingled in the vehicle found most agreeable and convenient for their speedy and successful administration. The catechu could only act as a good astringent, and was only used as such. To the other two belonged the virtue, as I believe, of restraining this deadly malady. Well-prepared chloric ether is a potent diffusible stimulant, with an action almost instantaneous. In certain forms of diarrhoea its effect, when swallowed, is almost magical,—creating a grateful, strengthening glow in the inner man, arresting colicky pains, and diffusing a feeling of comfort not to be understood but by those who have felt its beneficial effects. Any one may, however, test this by his own personal experience. The aromatic spirit of ammonia is more generally known and appreciated, and on its virtues I need not dilate. Their combination I believe to be most powerful and most beneficial in the complaint I have been treating of. The plan adopted, and fully understood and acted upon by Mr. Quinn in my absence,* was as follows:—A bottle stood ready, containing these two ingredients, in a suitable proportion of chalk mixture; and, on admission of each patient seized with cholera, or complaining of the premonitory symptoms, a dose was administered pending discovery of the exact nature of each case. If vomiting proved the prevailing feature, the hydrocyanic acid was added till that was subdued. Were purging the most urgent symptom, solution of muriate of morphia was combined in such dose, and as often as seemed desirable. The tincture of catechu was superadded in every case where purging at all prevailed. The vomiting or purging checked, as the case might be (and this generally happened after a very few doses of the mixture), the first bottle was returned to, and the 'chloric ether' and 'aromatic spirit of ammonia' were the weapons with which the disease was chiefly combated. I need only mention the other remedies tried in this epidemic. I remembered seeing arsenic highly praised, and I tried it, but without success. I cannot say, however, that I gave it an extended or fair trial. Suc-

* His assistant.

cessful otherwise, I was not inclined to make what might have proved *rash* experiments. I may say the same of 'veratria,' which also proved powerless in my hands. Electricity did wonders in resuscitating patients apparently defunct, but did not restore sufficiently to help recovery. The brandy given in small doses occasionally, with a moderate admixture of water, appeared to me a most useful adjunct, and was grateful as a drink to most of the patients. Some would not take it; with others it disagreed. In such instances the 'Imperial drink' was relished, and generally remained on the stomach, except where vomiting was more than usually violent. Sulphuric acid drink, too (℞ Acid. sulph. dilut. min. x.; aq. pur. ℥j. ad ℥ij.; sacchari, q.s.—M.), sometimes relieved the burning thirst, was generally liked and retained, and may be mentioned as being even trusted to as a 'remedy' in India by some. Quinine is excellent as a tonic in convalescence, and greatly aids the recovery of the strength after the exhausting process sustained by the constitution."

Our author concludes by begging his professional brethren to give this treatment an unprejudiced trial, being firmly persuaded it will often prove successful, if adopted *without delay*.—*Edin. Med. Journ.*, Dec. 1863.

ART. LXXIX.—*Cholera and Meteorology.*

METEOROLOGICAL SOCIETY.—At this Society, on November 18, the President, Dr. R. D. Thomson, F.R.S., read the annual address. Dr. Thomson dwelt forcibly on the connection existing between certain states of the atmosphere and the occurrence of endemic diseases. During the prevalence of cholera, the air has been found to contain an unusual amount of sulphurous acid, and, when passed through water, fungi are developed in that fluid. In the wards of cholera hospitals the air passed through water gives rise to *vibriones* and other lowest forms of animal life. Similar organisms are also developed when the air of the sewers is passed through water. These experiments prove that the germs of these animals exist in the atmosphere of close places, and show the intimate connection between the spread of disease and neglect of ventilation. The effect of the increased temperature during the summer and autumn months was demonstrated to be the cause of the diarrhoea so generally attributed to errors in diet and to the use of fruit.

ART. LXXX.—*Causes of Hepatic Diseases in the East Indies.*

By SIR J. RANALD MARTIN, C.B., F.R.S.,
Physician to the Council of India.

"Of all the causes which tend to the production of hepatic diseases

in the East Indies, peculiar climatic influences, acting on race, are the greatest—climatic influences which do not exist, or which exist in a very minor degree, in other hot countries. That the prevalence of malarious fevers and dysenteries, the absence of wholesome exercises, the confinement in over-crowded and ill-ventilated barracks, along with the abuse of animal food and alcoholic drinks, the undue exposure to heat, cold, damp, and other external causes, give a fearfully additional power and prevalence to attacks of those diseases in India, cannot be denied. But in estimating the extent of such influences in the East, as compared with other warm climates, it must be recollected that the ages, habits of life, duties, and occupations of British soldiers are the same in the West as in the East Indies; yet in the Windward and Leeward Command the cases of hepatic diseases are but 2·24 per cent., as compared with 6·2 in Bengal, 7·93 in Bombay, and 8·92 in Madras. The differences in the effects of climate are here presented as facts, but the essential nature of the difference is not physiologically ascertained. The effects of high temperature and of the rarefaction of the air on respiration and on the hepatic functions I do not here discuss, as they are common to the West as to the East Indies.

“If, on the other hand, chronic interstitial inflammation of the liver, or interlobular hepatitis, terminating in cirrhosis, be a common or chief result, in temperate climates, of the abuse of ardent spirits, as stated by Frerichs and by all modern writers, what must be the effects of such habitual abuse under a climate such as that of the East Indies, and under the defective sanitary arrangements existing there, in respect of the European soldier!

“The entrance into the portal vein,” says Frerichs, ‘of colourless corpuscles, of pigment scales, and of various products of metamorphosis, in certain diseases of the spleen, the effects upon the liver of different matters which find their way into the portal blood during digestion, together with many other circumstances affecting the circulation, innervation, and secretion in the portal system, are subjects which afford an ample field for investigation in connection with this subject.’

“Again:—‘The rapid absorption of spirits from the stomach into the portal vein must, in the first place, give rise to irritation of the liver, which after a time subsides, the more that the absorbed fluid becomes mixed with the entire mass of the blood, and evaporated through the lungs. After poisoning animals with alcohol, Perez found the largest quantity of alcohol in the liver.’

“For a hundred years we have fed, clothed, housed, and disciplined our British troops in India on the Prussian model of George II.’s time; and who shall count the united influences and consequences since then of the ‘fire-water’ and of the ‘fire-shirt’* on the sickness and mortality of those troops? The ‘regulation’ rum-ration and the ‘regulation’ red-jacket—very well in an English winter—

* The terms used for more than a hundred years by the natives of India to describe the “regulation” rum-ration and red tunic of the European soldier.

are death in tropical climates. The fact is that, chiefly through our own mismanagement, we shall never know how far hepatic diseases in India are to be referred to climate alone, until we shall have weaned the British soldier from the baneful habit of spirit-drinking. Here, it must be admitted, the common sense of the natives of India has been far in advance of our ever-imitative regulation-mongers.

"Of the progressive diminution of hepatitis, to be secured to us by improved habits and conditions of life, and by improved modes of medical treatment of malarious fevers and dysenteries especially, we may form some judgment from the facts stated by Dr. Ewart, of the Bengal Army. After presenting a Table showing the sickness and mortality from hepatitis during the years from 1812 to 1854, the author says:—'From this Table it may be affirmed that during the most modern periods of observation there has been a palpable diminution of cases of liver disease, as compared to the remote periods, amounting to 96 in Bengal, 43 in Bombay, and to 380 in Madras, out of 10,000 of strength. This gratifying result is partly due to the greater temperance of the European army in diet and drink, to their improved condition, and partly to our improved treatment of malarious fevers.' The climatic or external causes of hepatitis and its sequelæ are—the peculiar climate of the regions of the East, acting on the stranger European; the absence in India of a temperate zone, and the continued application consequently of an unnatural heat; the counter-influences of night-chills, and of other alternations in the temperature and humidity of the atmosphere. When these come to be applied to the white man,—a subject prepared, as we have seen, by constitution and habit of life for their reception,—we perceive how powerful, in the East Indies, these effects must be. European females are far less prone to hepatic disease of every kind than males, and this is mainly owing to their greater temperance, and perhaps, in some measure, to their sex.

"*Prevention.*—A just appreciation of the various causes of hepatic disease in the East will lead us far into a knowledge of the means necessary for their prevention; and the first of these will be found in the avoidance of the peculiar actions of the climate of the hot pestilential plains, the special seats of fever, dysentery, hepatitis, and cholera.

"There is no separating the causes affecting European from such as influence native health; and the vicinity of swarming towns, bazaars, and the lines of native troops, has ever been, and must always be, seriously detrimental to the health and morals of the British soldiery, from their climate, their extremely defective sanitary condition, and from their containing such large numbers of natives of the lowest castes and most depraved classes of both sexes, ever ready to minister to the worst propensities of the soldier. In most of our stations throughout India it would be difficult to determine whether they derive more of their injurious influences from climate and defect of proper locality, or from the defiance which they present to all measures of medical police.

"Were there no arguments other than those founded on such facts for securing immediate recourse to the pure cold atmosphere of the

mountain-ranges throughout India, surely they ought to suffice to determine the question in favour of the soldier. And even if over-feeding, the over-crowding in barracks, the fire-water and fire-shirt be his necessary lot, they will be made to lose more than half their venom in the European climates of the hill stations everywhere to be found in the East.* But it must be remembered that hill stations, even the best, must require culture of the soil and other labours to render them fully effective; indeed, no locality, however favoured, can be exempted from such necessary attentions. In sanitary affairs especially, error begets error, and we are not less injured by those we commit than by those we omit or give occasion to. To remedy the enormous evils consequent on the malposition of our European troops, we must look alone to the Government—the only moving power in India; for the natives, without such influential promptings, will do nothing, even in the places inhabited by themselves. The removal, therefore, of the British troops to other and better stations than those now generally occupied by them on the plains would seem imperative, as an immediate duty to the army, if we are to arrest the present enormous rates of sickness and mortality in their ranks. Were the stations on the plains as healthy as they are notoriously the reverse, the time, labour, and cost of their sanitary improvement over the vast area of British India would be something inconceivably great; while, obviously, on the hill-ranges, the time, labour, and cost required for improvement would be comparatively trifling. I am aware that the rum-ration and the red jacket are not in such open and avowed favour as formerly; but fancy in command may any day restore them.

“*Conclusions.*—The native Hindoos do not suffer from hepatic diseases in any degree as compared to the European. This must be—1st, partly because the native population is acclimated, and proof against the malarious influences so pernicious to the European; and 2nd, partly because of the extreme comparative temperance of the native population in all that relates to animal food and stimulating drinks.

“The inference deducible from the foregoing remarks clearly is, that we should, as far as practicable, raise the Europeans in India above malarious influences by placing them in the cool mountain-ranges; and that we should endeavour suitably to assimilate their condition to that of the native in all that relates to diet, clothing, exercise, etc.

“Occupations and amusements for the European soldier are especially needed in hot climates, where, during the hot and rainy seasons, he is shut up during many months of the year. In that season the soldier is an absolute prisoner, the monotonous parade even being seldom practicable. He wearies in body and mind, and longs for the *medicina mentis*. When anything in this direction has been thought of throughout our foreign possessions, what little has been

* The Psalmist prized his mountain at a high value: “He brought them within the borders of his sanctuary, even to his mountain, which he purchased with his right hand.”

done has been by halves, by fits and starts, and with very little effect.

"A curious problem is beginning its solution in India, the war between the Federal and Confederate States of America tending to force the cultivation of India by European capital and enterprise in an extraordinary degree. This cultivation must tend to diminish malarious influences by purifying the soil, and thus effecting the greatest improvement in climate. Cotton, coffee, and tea are already being cultivated, and will prove of enormous sanitary importance in the future of India. Every square mile of jungle converted to the growth of crops useful to man, is, *pro tanto*, an improvement of the East in a sanitary point of view."—*Lancet*, May 30.

ART. LXXXI.—On *Hepatitis and Abscess of the Liver*,

From the recent work of Dr. J. Davy we extract the following passage :—

"The foregoing cases are only a portion of those of diseased states of the liver which I have by me ; they may suffice to show how difficult is the diagnosis of hepatic disease, and the great liability there is in consequence to error ; nor, when we consider the nature of the organ and its position, is such a liability at all surprising. Possessing little sensibility, even inflammation, even the formation of an abscess in it, is not necessarily productive of pain. And, placed as it is, contiguous to other organs, all of them of the first importance, in its morbid state it can hardly fail exercising a deranging influence on those nearest the seat of the lesion and producing epiphenomena, which may readily be mistaken for primary affections. The cases in which an abscess in the liver has penetrated through the diaphragm into the lung are striking examples of this, and their proportional frequency is remarkable.

"Whether there be any true connection between disease of the liver, especially abscess and ulceration of the large intestines, is open to question. I am disposed to adopt the affirmative opinion, and that the one exercises an influence on the other, somewhat similar to that which pulmonary tuberculosis exercises on the ileum, especially productive of ulceration.

"In some of the cases detailed a cachectic state of the system seems to have occurred in connection with hepatic disease, lowering the vital powers and preventing healthy reaction, and in consequence occasioning death, as it were, by exhaustion. Many more instances of the same kind have been kept back.

"The term 'abscess of the liver' I have used, as it is commonly employed ; yet it can hardly be doubted that what is so called is far from uniform, or of the same kind. Judging from its contents, in one instance it may have the character of a phlegmon, in another more the character of an excavation, as if formed from softening and softened tubercle, and in a third it may have a close resemblance to an hydatid sac, if not this in reality, in course of change after the death of the entozoon.

"What are the effects of bile when absorbed after its secretion, or of its elements in the blood, if not eliminated by secretion, are curious questions for inquiry. That the effects, more or less, are toxic, seems probable.

"On the treatment of hepatic disease I have little to offer, that little owing to my ignorance of any successful mode. When an abscess is once formed in the organ, I am doubtful that any of the received modes of counteracting it are efficacious, and this whatever may be the kind of abscess. Large blood-letting seems to exhaust the strength without arresting the disease; mercury used to salivation seems to have a similar weakening effect, and no certain good effect. Both the lancet and mercury I feel pretty confident were abused in the old practice. I am inclined to think that kind of practice is the safest which affords the best chance of the powers of nature, the *vis medicatrix*, being brought into action, consisting in the use of gentle means, mild medicines, and regard to diet and exercise; life at least may thus probably be prolonged, if not a natural cure effected. In no instance have I known recovery from an abscess in the liver, whether left to follow its own course and burst internally, or opened by the trocar of the surgeon. The operation, however, of a paracentesis is unquestionably justifiable, on the ground of affording a chance of recovery; almost invariably it affords relief, and often prolongation of life. Were it, in the most suitable cases, performed early, it is likely that the number of successful results on record would be greater; but unfortunately the early stage is too often inappreciable: most commonly when the tumour is distinct, the abscess is advanced."—*Dr. John Davy, Diseases of the Army*, p. 156.

ART. LXXXII.—*Illustrations of Hepatic Disease, with Observations.*

By THOMAS LOWE,

Medical Officer, Sappers and Miners, Madras.

CASE I.—*Suppuration: Hepatic Abscess discharged through the bowels; cure.*

CASE II.—*Acute Hepatitis: Suppuration; Abscess discharged through the bowels; hydatids; recovery.*

This is an interesting case, but we have not space to give it in detail. On the fifth day after admission the following is the entry in the hospital journal:—

"13th.—Patient sitting up in bed, looking much better; was called to stool about 2 A.M., and has been five times since. She has no fever, and the tumour has almost disappeared. On examining the evacuations, I found them made up of puriform liquid full of floating hydatids, tinged with bile. The *echinococci* were very numerous, and not only solitary, but in small globular masses; there were also many opaque yellowish masses of granules of an irre-

gular form. The last evacuation appeared like minute fish-spawn. These I examined with the microscope, and found them to be echinococci."

After this the patient made a rapid convalescence, and took a sea-voyage. Mr. Lowe remarks as follows:—

"How long this patient had been the subject of hydatids it is difficult to say. The sac that contained these acephalocysts had probably existed a long time, and it is possible that the hydatid tumour might have gone on developing as a pure and simple hydatid growth for years without even much injury to health. These acephalocysts are incapable of forming pus, for they are not nourished by blood-vessels; but in the long-run by progressive development they may imperil life by pressure upon the cava or portal vein, or by bursting within the peritoneal cavity, and inducing intense peritonitis.

"In this instance the hydatid tumour suppurated, and the contents of the tumour were tinged with bile."

CASE III.—*Acute Hepatitis; suppurative inflammation; discharge of abscess through abdominal wall; recovery.*

Mr. Lowe's remarks on this case we append in full, as a valuable contribution to the discussion on the safest procedure in the treatment of liver abscess:—

"This case presents several interesting pathological features of some importance.

"In the first place, this patient had been all through the hot-weather campaign under General Whitlock, and, with others, must have suffered considerably from the continued exposure to the intense heat during that campaign.

"A general hyperæmic condition of the liver would account for his dyspeptic symptoms on first admission, and this condition was doubtless intensified after he returned to duty by the habit of indulging in the *two drams of spirit* allowed each man daily. *Absence of rigors*, indicative of the formation of matter, was peculiar. There was no reason to suspect ulceration of the stomach or duodenum; he had not suffered from dysentery; but his portal blood had doubtless become vitiated by a deranged state of the mucous surfaces and the contaminated matters brought by the splenic vein. This man had bivouacked in the malarious jungles of Central India.

"In this case the inflammation was confined to the lobular substance of the liver; its peritoneal covering was free, until the adhesive inflammation was set up which conducted the abscess to the abdominal wall.

"The colour of the pus.—It was chocolate, claret-coloured, green and black, as from streaks of clotted blood.

"Dr. Budd says,* 'This description is incorrect. In all the abscesses of the liver I have examined the pus was *white or yellowish*;' and he accounts for other observed 'errors' by supposing that in all the cases in which the pus was of the colour I state, it had passed through the lungs—been '*expectorated*.'

* 'Diseases of the Liver,' 3rd edition, pp. 104, 105.

11. Those great outbreaks which have occurred in the Provinces and Punjaub appear to be confined to certain localities, and then only in certain localities, and are accounted for otherwise than by peculiar local conditions combined.

12. The influence of winds is very marked, thus, during the epidemic of 1817, the disease was most intense when the wind was from the north-west, but as it veered towards the east it diminished, and disappeared when the wind passed to the south.

13. It is, however, more than probable that the cases ascribed to winds are due also to other causes, of the like, which, both at Mean-Beer and at Gwalior, east of barracks and hospitals, is a very fertile soil, and appears hitherto to have been the cause of cholera.

14. Those portions of the soil which are composed of a dry sandy soil are most liable to be the cause of cholera; while other parts of the surface is composed of clay, like the soil of the Provinces, or less severely in every epidemic.

15. All this points most explicitly to the influence of other influences and circumstances, which are bringing about and aggravating the disease.

16. A rule should be laid down, that no troops should move into camp at once, and that they should be treated with them.

17. The influence of privies is very marked. In No. 5 of 5 cases which occurred in 3 barracks, 2 cases occurred, both in the south end, adjacent to the privies. In No. 4 barracks, 2 cases which occurred in No. 4 barracks, of the building next the privy. In No. 3 barracks, 2 men were taken ill in the and 2 cases in No. 5 barrack, 4 were taken ill in the barracks, of the barrack, adjacent to the privies.

18. The influence of stable manure is very marked, was marked in a less degree.

19. It was observed that cholera was most prevalent in the corners of barracks, and in the corners of barracks.

20. The high reputation of the troops appears to depend on the position of the barracks, as regards prevailing winds, and the position of the barracks.

21. Contrary to what might be expected, cholera is more prevalent during the years of peace than during the years of war. But in the cholera months of July and August, it is greatly in excess of others, more prevalent during the years of peace.

22. At Mean-Meer, the barracks are situated where the drainage is most defective, and the drainage is most defective.

Here also, and at Gwalior, it was observed that the drainage is most defective, and the drainage is most defective.

EAST INDIA AND CHINA STATIONS.

observe such symptoms, it is our duty to recommend change of climate, for in a short time our patient will be reviving power of any change."—*Madras Quar. J.* April, 1863.

XXXIII.—On the Treatment of Acute Hepatitis in its Suppurative Stage.

By J. C. CAMERON, M.D.,
Deputy Inspector-General.

I am induced to offer the results of my own experience in the treatment of hepatic inflammation and consequent abscess, for the sake of my younger brethren whose lot may be cast in climates, from finding it opposed to what may be considered the ruling of recognised authorities on such matters, and for the importance of our coming to a right decision as to what has been done with a patient so unfortunate as to have an abscess. In a work published last year, under the title of a 'Manual of Diseases of India,' I find the question thus summarily disposed of:—All operative interference is now universally condemned. It should be allowed to become reddened, and show position of pointing before a matter may artificially be evacuated. I have said that it is impossible to conceive the existence of a hepatic abscess which could justify the trusting an exploring needle into the liver. I cannot read these sweeping assertions without deeply regretting the experience of generations of medical officers, and the results of their varied treatment of thousands of hepatic abscesses, should be hunted and entombed in the record rooms of our Medical Boards. I have analysed many of them, and I should have a boldness to appeal to that would vary settle decisively such points of practice. Instead of leaving them to the action, according to the dicta of individual opinion, I have led up to in one general conclusion, obsolete and neglected in another. Hepatic abscesses may be considered practically under two heads:—one of suspicion and certainty, and the other of interference, but to stand by as spectators of a duel between the two, and an enfeebled constitution, contenting ourselves with supporting the latter in its daily struggles, and using local application to our pointing. It is admitted that few survive such a combat, and that while it is going on, a daily-increasing collection of pus is being poured out the liver, or endeavouring to work its way into the pleura, or even into the pericardium, liable to destruction at any moment. However, the patient is being run all these risks for weeks, and are told that it is less dangerous to run all these risks for weeks, than to venture on puncturing a plainly-discernible abscess, or hazard a search for one deep-seated. I say, on the contrary, that when we have just grounds for believing that abscess exists, that when we have not been day in evacuating it.

"The green colour I noted was owing to the quantity of bile mixed with the pus. This also Dr. Budd says he has not remarked; but Rokitsansky notices the fact.

"*This patient passed bilious stools almost the whole time; his motions were never clay-coloured.*

"He had no pain in the right shoulder, no tenseness of the right rectus muscle, and yet the abscess was on the convex surface of the right lobe of the liver. He had no cough, no vomiting; all these sympathetic disorders were absent.

"Although the abscess was an enormous one, I believe much benefit was derived from the application of the *leeches* and *blister*; they probably prevented it becoming larger.

"It may be thought that I caused the *patient's* sufferings to be protracted in not opening the abscess when it had pointed at the surface, and all doubts of adhesion with the wall were absent.

"I think it is better to allow an abscess of the liver pointing through the abdominal wall to open of itself, for the following reasons:—

"1. Because of the inelastic structure of the lobular substance of the liver not permitting the cavity to contract when a free opening has evacuated the pus.

"2. Because the air invariably enters when an artificial opening is made, and rapid decomposition of the pus takes place, and renewed inflammation of the walls of the sac sets in.

"3. This renewal of inflammation and fever may end in gangrene, as I have seen, and may rapidly prove mortal.

"4. Because when we leave this operation to nature, while we take every care to support our patient, she uses such gentle yet effective means of voiding the pus. The little apertures which form at the apex of the abscess never close up, and as the matter is always oozing out, air cannot enter—no decomposition takes place, no secondary fever sets in. The patient feels no shock from the loss of the matter which escapes so gradually, and as it escapes so nature closes up the walls of the sac.

"This patient, moreover, was kept in a state of absolute repose."

CASE IV.—*Acute Hepatitis: suppurative inflammation; abscess discharged through the intestines; recovery.*

"In this case, as in No. 1, the suppurative inflammation was induced insidiously by the combined effects of intense heat and malaria. Often under such circumstances their existence is not known until severe structural changes in the organ manifest themselves, and then they run a rapid and often fatal course. 'The transition,' observes Dr. Lowe, 'from the chronic to the acute disease, is often rapid; but the *burning, mottled hand* and feet, the irritable temper, the capricious appetite, the languor, and the feverishness, and the frequent, settled gnawing pain in the shoulder and back, are all pathognomic signs of the changes going on in the liver, which an attentive observer at once recognizes.'"

"The fever may be from time to time of a continued or intermittent type, and the patient emaciates slowly, becomes sad and desponding; the face becomes pale and cachectic, and patched. . . .

When we observe such symptoms, it is our duty to recommend immediate change of climate, for in a short time our patient will be beyond the reviving power of any change."—*Madras Quar. Journ. Med. Sc.*, April, 1863.

ART. LXXXIII.—*On the Treatment of Acute Hepatitis in its Suppurative Stage.*

By J. C. CAMERON, M.D.,

Deputy Inspector-General.

"I am induced to offer the results of my own experience in the treatment of hepatic inflammation and consequent abscess, for the consideration of my younger brethren whose lot may be cast in tropical climates, from finding it opposed to what may be considered the present ruling of recognised authorities on such matters, and from the vast importance of our coming to a right decision as to what should be done with a patient so unfortunate as to have an abscess in his liver. In a work published last year, under the title of a 'Manual for the Diseases of India,' I find the question thus summarily disposed of:—'All operative interference is now universally condemned. The integument should be allowed to become reddened, and show positive evidence of pointing before matter may artificially be evacuated.' It is further said that it is impossible to conceive the existence of any case which could justify thrusting an exploring needle into the liver. One cannot read these sweeping assertions without deeply regretting that the experience of generations of medical officers, and the results of their varied treatment of thousands of hepatic abscesses, should lie silent and entombed in the record rooms of our Medical Boards. If any available analysis of them existed, we should have a body of facts to appeal to that would settle decisively such points of practice, instead of leaving them to vary according to the dicta of individuals looked up to in one generation, obsolete and neglected in another.

"Hepatic abscesses may be considered practically under two heads—suspicion and certainty, faith and sight. In both alike we are told not to interfere, but to stand by as spectators of a duel between hectic fever and an enfeebled constitution, contenting ourselves with supporting the latter in its struggles, and using local applications to favour pointing. It is admitted that few survive such a combat, and that while it is going on, a daily-increasing collection of pus is hollowing out the liver, or endeavouring to work its way into the lungs or bowels, the patient being liable to destruction at any moment from rupture into the pericardium, peritoneum, or pleura. Yet we are told that it is less dangerous to run all these risks for weeks than to venture on puncturing a plainly-discernible abscess, or hazarding a search for one deep-seated. I say, on the contrary, that when we have just grounds for believing that an abscess of the liver exists, we ought not to lose a day in evacuating it by puncture, and that we are both

justified and safe in endeavouring to hit upon it with a trocar when deep-seated, avoiding the gall-bladder and large veins. Dr. Murray, our Inspector-General in Bengal, who was an able practical physician, advocated this practice in the 'Madras Medical Journal' twenty-five years ago, and stated that the Indian *hakims* had immemorially resorted to puncture of both liver and spleen for the dispersion of enlargement with induration. I have never tried it on the spleen, but I have repeatedly plunged a trocar deep into an enlarged liver without finding an abscess, and never had the slightest ill result beyond a little local pain, yielding readily to opium, or a few leeches round the puncture. I have also found such puncture followed by gradual absorption and disappearance of the enlargement. In men who have died with abscesses that I failed to reach, I have found it extremely difficult to detect the marks of such unsuccessful explorations, and this, too, when there have not been any adhesions; so that I believe the danger said to attend on such an operation has been diagnosed rather from analogy than from any actual consequent mortality.

"But, granting the dangers to exist, the question arises whether they are greater than those resulting from non-interference; and I have no hesitation in saying that they are infinitely less. How many men die without any attempt at pointing, though their liver may have been converted into a mere purulent sac; and who shall say that their life might not have been saved by operation when perhaps there was not above a few ounces of pus secreted? I have seen the ribs denuded and carious in such cases, while the surgeon had waited for weeks to see the abscess point; the man dying, worn out by fever and diarrhœa. Every officer of long hospital experience in the East must have his memory stored with such melancholy victims. I would certainly never allow a patient to die of hepatic abscess without making every attempt to evacuate it, and that at the earliest possible moment, when as yet the constitution retains some vigour. A trocar, with canula of the medium size, I consider preferable to either scalpel or lancet for opening the abscess. The latter may be used, where the skin is thick, to divide the integument, and thus allow the trocar to enter with a gentle force. Should it have passed into an abscess, the pus will flow readily through the canula with a little help from a probe and the aid of gravitation. When the abscess seems pretty well emptied, the canula should be carefully fastened in by twine passed through perforations in its rim, and also by broad sticking-plaster over it, leaving a small central opening. It may be found painful, difficult, or even impossible, to replace a canula that has slipped out, particularly in deep-seated abscess. A large warm poultice should be laid over the side, and the man placed on it, with a circular pad or pillows so placed as to obviate pressure on the canula. A strong dose of morphia should be given immediately after the operation, which is generally attended with great relief, and followed by refreshing sleep. The poultices should be changed twice, or oftener, in the twenty-four hours; and at his morning visit the surgeon should see to the opening, and aid the discharge by very gentle general pressure over the side, avoiding all poking or thrust-

ng with the ends of the fingers. About the third day the canula may be withdrawn and replaced by a tent of lint dipped in oil, which should be changed daily. A liberal diet, with porter, wine, and if possible food that the patient will relish, should be supplied. If things are to go well, the discharge will gradually lessen and the patient gain strength; the probe will show that the depth of the cavity is decreasing, while the general enlargement of the side has quite subsided and disappeared. By-and-by a clear mucous gleety-looking fluid replaces the pus, and finally the wound closes. Should the case be likely to end badly, either from the existence of a plurality of abscesses, the great size of the one opened, or an absence of all constitutional power to repair damages, it is denoted by the continuance of hectic and wasting discharge; but, under any circumstances, the operation seems to afford relief to symptoms, and to give the patient an extension of life, and ease in dying. This was particularly shown in some of Dr. Murray's cases, especially in one officer, who had a large abscess burst through his right lung before Dr. Murray visited his station. Being greatly distressed by a feeling of suffocation, and harassed by incessant cough, with constant purulent expectoration, that gentleman punctured the liver, and, by giving vent to the abscess externally, placed the patient in comparative comfort, though too late to do more than smooth his path to death.

"When the operation has been decided upon, but there is no particular prominence in any region of the liver, but merely a general fulness of the side (and this perhaps only distinguishable by going to the foot of the bed, and comparing from thence the right and left outlines of the trunk), a very careful examination may guide us as to the likely spot. We should trace all the intercostal spaces, and if any superficial œdema be found, the abscess may be expected under it, and close at hand. The slightest intercostal fulness should be noted, and the patient desired to breathe deeply, while a finger is fixed with gentle pressure flat along the spot. If the breath be caught precisely under it on deep inspiration, that is the spot for puncture; and, in the absence of local fulness, the place where the inspiration is most impeded must be our guide, with due attention to anatomical relations. It is remarkable how often one can determine the exact seat of greatest pain in breathing, etc., within the size of half-a-crown or less. Failing any such guide, the surgeon must rely on the general aspect of the side, and that inexplicable impression which experience alone can supply, and which so often proves correct, though one is quite unable to define its exact grounds."

Dr. Cameron next relates in detail three cases, of which we can only give the headings:—

CASE 1.—Slow insidious abscess, opened near the angle of the ribs; perfect recovery.

CASE 2.—Abscess occurring rapidly, but without any very marked symptoms, during an attack of fever; opened in the epigastrium—perfect recovery.

CASE 3.—Acute hepatitis, ending in deep-seated ing, but great enlargement; abscess opened for—

owing to the escape of the canula and impossibility of replacing it; perfect recovery, and disappearance of all enlargement.—*Lancet*, June 6th, and 13th, 1863.

To the Editor of 'The Lancet.'

"Sir,—In 'The Lancet' of the 6th ultimo, there is an article on the treatment of Acute Hepatitis in the suppurating stage, on which I desire to make a few remarks.

"I quite agree with Dr. Cameron that it is of 'vast importance to come to a right decision as to what should be done with a patient so unfortunate as to have an abscess in his liver.' A little further on Dr. Cameron proceeds to show that in his judgment the 'right decision,' when the abscess is matter of 'certainty,' is to plunge a trocar into it; when a matter of 'suspicion' or 'faith,' to explore the liver with the same instrument in search of the abscess. Dr. Cameron maintains 'that we are both justified and safe in endeavouring to hit upon it (the abscess) with a trocar when deep-seated, avoiding the gall-bladder and large veins.' Having had some experience of the results of this 'prospecting'—to use a gold-hunter's expression—for pus in the liver, I venture, in behalf, not only of those 'younger brethren' to whom Dr. Cameron mainly addresses himself, but of their future patients, to enter my protest against it.

"Deputy Inspector-General Cameron, in support of his views, cites the opinion and practice of the late Inspector-General Murray, who, by precept and example, was an earnest advocate of liver exploration. Now, when Dr. Murray first landed in India I was a young assistant-surgeon in the Madras Army, doing duty with one of her Majesty's regiments, and of course under the professional orders of Dr. Murray. Circumstances threw me into very intimate professional relations with the Inspector-General, which resulted in an intimacy that terminated only with his life. Dr. Murray was an able and energetic administrative medical officer, a good operating surgeon, but fond of novelty, and very adventurous. Until he landed in Madras he had no experience in tropical disease, save what he had gathered in private practice at the Cape of Good Hope among invalids from India, who at that time resorted to the colony in search of health. Whether or not Dr. Murray took up the notion of 'prospecting' with a trocar for abscesses of the liver from 'Indian hakims' I cannot say; it is quite true that he put it largely into practice, and that he urged it with untiring zeal on all who came under his orders and influence. I was present at a great many of Dr. Murray's explorations in cases where the abscess was matter of 'faith,' and more legitimate operations where it was a matter of 'certainty,' and at this distance of time vividly remember the details of the single case that had a fortunate issue, in the person of a soldier of the 57th Regiment, left after the operation under my care in the Queen's Garrison Hospital at Madras, after the man's regiment had embarked for England. In this case the abscess was in the left lobe of the liver, and pointed near the epigastrium—a fact the full significance of which will be more evident by-and-by. Dr. Murray shortly afterwards

proceeded to Bengal, where his valuable life was cut short by an attack of dysentery, and with him died the short-lived practice of thrusting trocars into the liver in search of abscesses of unknown site.

“Dr. Cameron regrets the want of accurate statistics on the subject of hepatic abscess, but the numerical method has been more applied to elucidate this subject than he seems to be aware, and the results do not tend to support his favourite operation. Dr. Waring, of the Madras Army, has collected 81 cases in which hepatic abscesses were evacuated by surgical means; of these, 66 died, and 15 recovered. The whole of Dr. Murray's published cases are included in this statement. Morehead, in his ‘Clinical Researches,’ gives us 24 cases in which the operation of puncture was performed; of these, 5 recovered completely; the history was incomplete, but recovery probable, in 2; and in another case the patient died in a year from a second abscess. In all the successful cases the abscess pointed at the epigastrium or at the margin of the right ribs above the level of the ninth. The abscesses were all of moderate size, and from their position it might be inferred that they had formed in the thin part of the left lobe, or in the thin edge of the right. So much for the successful cases. In 13 out of 16 fatal cases, gangrene of the tissues around the punctures and the subjacent structures followed the operation.

“For more than ten years I was Residency-Surgeon at Hyderabad, in the Deccan, and during that long period had an immense field of observation before me. I gave this operation of puncturing hepatic abscesses a very patient trial in native patients, without a fortunate issue in a single example. The operation was performed in a variety of ways; in every case the existence of pus was well ascertained, both from the physical and constitutional symptoms; in no case was there any ‘prospecting’ on ‘faith’ or ‘suspicion.’ Sometimes a valve-opening was made, with the view to exclude as much as possible the entrance of air into the sac of the abscess. In other cases the opening was made with a trocar, to which was attached a canula furnished with a stop-cock, which was opened from time to time. In some a simple trocar was used, after the manner so confidently urged by Dr. Cameron. In all, the result was the same; sooner or later, gangrene of the tissues around the puncture ensued, quickly followed by the death of the patient.

“For two years and a half I have been in charge of the Medical Division at Fort Pitt, and latterly at the Royal Victoria Hospital, Netley. The whole of the invalids from the tropics, labouring under medical disabilities, have passed under my observation before being sent to their homes or depôts. During this period I have seen a great many patients who had discharged hepatic abscesses by the lungs or the bowels,—indeed, I can hardly call to mind a month when one or more such cases were not under observation; but I have seen only 2 cases where the abscess had been discharged artificially through the abdominal parietes: both are in the Royal Victoria Hospital, Netley, at this time, and I did not fail to point out to the young medical officers studying in the wards, not only the a

treme rarity of such cases among the invalids, but the fact, already more than once adverted to, that the cicatrix of the abscess is in both cases in the epigastrium, showing that the site, like the vast majority of the successful cases recorded, had been in the left lobe of the liver. This fact is commended to the careful consideration of Dr. Cameron. The truth is, that if we except these comparatively rare cases in which liver abscesses burst into the pericardium or the peritoneum, the worst route an abscess can take is to the surface, unless it be small and situated in the left lobe. The route that gives the largest percentage of recoveries is unquestionably that through the right lung; next in order is the route by the bowels. And this gives the strongest possible argument against exploring the liver with needles and trocar whenever constitutional signs of suppuration in that organ declare themselves. Without discussing the question as to whether or not it is possible to push trocars into the parenchyma of the gland without inducing mischief, I am by no means disposed to concede the point merely on the ground stated by Dr. Cameron, viz. that little pain follows the operation; because we know too well that the liver is not a very sensitive organ, and that deep-seated abscesses may exist in it without causing any suffering until its capsule is involved. But admitting, for argument's sake, that an unsuccessful exploration is followed by no evil results, what may we look for when a trocar, more fortunately, as Dr. Cameron would deem it, reaches an abscess seeking discharge by the lung or bowel? Why, a direct communication will at once be established between the suppurating cavity and the external air, and the patient, by the officiousness of the surgeon, will be wantonly subjected to all the risks of the most unfavourable point of discharge, the route that gives the smallest proportion of recoveries of the three under discussion. More might be urged against the indiscriminate use of the trocar in hepatic abscesses if I were not afraid of trespassing too much on the space available for such discussions. The subject is one of great importance, and it is to be hoped that other physicians of large Indian experience may be induced to give their views on it. Meanwhile, it is hoped that what has been advanced in this communication may have some effect on the minds of young physicians, teaching caution in surgical interference, except in cases of abscess clearly and unequivocally pointing to the surface.

"I am, etc.,

"W. C. MACLEAN, M.D.,

Dep. Insp.-Gen., Prof. Milit. Med., Army Med. School.

"Royal Victoria Hospital, Netley, July, 1863."

(Lancet, July 18, 1863.)

The discussion of this question is renewed by Dr. Cameron, in the 'Lancet' of August 8, and by Surgeon Crerar, 60th Rifles, in the number for 29th August. Mr. Crerar, from his experience (which, he says, is limited), supports the views of Dr. Cameron.

In Bengal the operation was practised and strongly advocated some years ago by Dr. John Murray, of Agra, a relative of the late Inspector-General Murray; but we believe we are correct in stating

that the practice, after many trials, has been abandoned by the most experienced of the local medical officers.

In the 'British Medical Journal,' May 23, 1863, the question is very fairly stated by Sir Henry Cooper, M.D., Hull, who communicates a successful case. The following are extracts from his remarks:—

"The rule of practice in these cases is not settled. The one great essential, on which all are agreed, is the necessity of adhesions to prevent peritoneal effusion. Frerichs says ('Treatise on Diseases of the Liver,' p. 147, New Sydenham's Society's edit.): 'When the abscess takes a direction outwards, we ought not to delay in making an artificial opening.' He then goes on to describe the processes adopted by Bégin and Récamier for securing adhesions before the opening is made, either by an incision carried down to the peritoneum, in which inflammation is excited by charpie dressings; or by a caustic issue, eating through the abdominal parietes to the same point, and with like intent. Dr. Graves gives a case ('Lectures on Practical Medicine,' vol. ii. p. 248) in which an exploratory incision was made, fluctuation being absent; and the pus escaped by a lateral channel, on the patient making an effort, seven days afterwards. On the other hand, Dr. Budd advises leaving the evacuation of the abscess to nature; and our Indian authorities seem to be of the same opinion, which they confirm by a formidable table of statistics of mortality after operation. Sir Ranald Martin, in his recent work on the 'Influence of Tropical Climates,' p. 485, says: 'It is little we can do for the unhappy sufferer from hepatic abscess—in no instance did the operation (opening) appear to me to result in eventual good;' and he then proceeds to express his agreement with Budd, that 'it is generally best, when an abscess of the liver projects at the side, to allow it to open itself.' Dr. Waring, of the Madras Army, says that, of 81 operated on, only 15 recovered, and 66 died ('An Inquiry into the Statistics and Pathology of some Points connected with Abscess of the Liver, as met with in the East Indies'); and so M. Rouis gives, as the result of Algerian experience, 4 deaths of 5 cases operated on ('Recherches sur les Suppurations Endémiques du Foie,' Paris, 1860). The French method of exciting peritonitis by charpie and caustics is open to the obvious objection of provoking the very danger we are seeking to avoid. If the adhesions have not formed already, we are exciting an inflammation on which we have no means of imposing a limit; if they have, the proceeding is unnecessary. In either case, these processes, especially the caustic, interpose a serious delay at a very critical period. The truth I believe to be, that in all cases in which the suppuration has extended so near the surface of the liver as to give the sense of fluctuation, irritation, effusion, and adhesion of the contiguous membranes have taken place. This tendency of a foreign body to seek the surface and secure for itself a safe opening is too well established to be further dwelt on. The proposal to open entirely to nature is undoubtedly sound and good, and the powers of the patient are adequate to the long process."

tion through the textures. But this is assuming a greater amount of vital power than is usual at this stage of the disease; and it must not be forgotten that the patient is thus exposed to the constant risk of spontaneous rupture and its fearful consequences. The formidable Indian statistics above alluded to must be taken with the important reservation, that we have no means of judging how far the mortality was due to the operation itself, and how far to the disease and the state of general health induced by climate and other causes. . . . I do not wish to attempt to draw a rule of practice from a single case; yet I think the foregoing may furnish some useful data. Where there is reasonable ground to believe that nature has decided upon making an external outlet for the matter, we need not be deterred by the fear of peritoneal effusion from making an artificial opening, inasmuch as one of the earliest and most certain of her operations is to make the connections necessary for security. Tenderness of the tumour is perhaps the most satisfactory indication of this condition, and a hardened base of effused lymph a certain confirmation. Again, there is no object to be gained, under such circumstances, by opening the abscess by successive stages, either by the knife or (still less) by caustics; for delay exposes the patient to the risk of rupture of the walls of the abscess by coughing, sneezing, or the like, and to the laceration of any adhesions which may have formed; or it allows him to perish unrelieved, from the effects of constitutional irritation and consequent exhaustion."

ART. LXXXIV.—*The Relation of Dysentery to Abscess of the Liver, as shown by the Clinical Records of the European General Hospital, Bombay.*

By W. J. MOORE, L.R.C.P. Edin.,
Assistant-Surgeon.

"The following Table exhibits the ratio of abscess of the liver to dysentery, according to different observers:—

Observer's Name.	Where observed.	No. of cases.	No. of cases in which disease of Liver was observed.	Proportion	No. of cases in which Abscess was observed.	Proportion
Machpherson {	European General Hospital, Calcutta . .	160	84	52·5	21	13·1
French Surgeons . .	Algeria . . .	157	65	41·4	20	12·7
Eyre . . .	Madras Fusiliers, etc. . .	118	49	41·6	27	22·8
Waring . .	Various localities . . .	633	Not stated	...	149	23·5

Observer's Name.	Where observed.	No. of cases.	No. of cases in which disease of Liver was observed.	Proportion	No. of cases in which Abscess was observed.	Proportion
Stovell . . .	European General Hospital, Bombay . . .	129	71	55·0	25	19·3
Leith (one year)	Ditto . . .	47	Not stated	...	4	8·5
Leith (several years) . . .	Ditto . . .	92	Ditto	...	14	15·2
Moore . . .	Ditto . . .	196	60	30·6	35	17·8
Parkes . . .	Burmah . . .	25	Not stated	...	7	28·8
Marshall . .	Ceylon . . .	25	Ditto	...	7	28·8
Macnamara .	Madras . . .	51	Ditto	...	26	50·9
Morehead .	Bombay . . .	80	Ditto	...	12	40·0

"If the first eight observers' figures are taken, it will be seen that in 1532 cases there were but 295 examples of abscess, or 18 per cent. If the last four only are considered, there is found to be 131 cases, with 52 instances of abscess, or approaching 40 per cent.

"My own impression is, that the former is the correct ratio, and it would appear probable that the cases referred to by the latter authors were not all instances of abscess of the liver, but that, like Dr. Machpherson's and the French Series, *all diseased conditions* found in the organ have been taken into the account.

"Indeed, it would appear certain that hepatic abscess following dysentery is *not* the rule, but that the liver disease, when it does so occur, is mostly caused by the same excitants (as climate, cold, vicissitudes of temperature, etc.) promoting the dysentery. Otherwise we might expect abscess of the liver in every case of the former affection, and also during the progress of ulcerations of typhus, of phthisis, and of those following severe burns, which assuredly is not the case. Of course, in a tropical climate, the liver during dysentery, as in the progress of any other disease, or during health, is more disposed to become affected than it is in a colder latitude, which possibly may alone account for the number of cases in which liver diseases and dysentery are co-existent.

"It has been supposed by many authors, as Sir Ranald Martin* for instance, that an intimate connection exists between inflammation, or ulceration of the cæcum, and liver disease. This idea, however, is not confirmed by the results of the *post-mortems* I examined. In only 22 instances, or in 11·2 per cent. of the whole number, is this part of the intestines noted as particularly affected in connection with liver abscess, while the total of cases noticed as having the cæcum affected is 72, or 36·7 per cent.

"The other points of interest remarked in connection with these cases were, that perforation is noted to have occurred in 23 instances (11·7 per cent.), and extension of the inflammation to the small intestines in 26, or 13·2 per cent.

* Martin on Tropical

"The following Table exhibits these latter points :—

No. of Post-Mortems.	No. of Cæcums recorded affected.	Proportion.	No. of cases of Liver Abscess and cæcal diseases.	Proportion.	No. of cases of Perforation.	Proportion.	No. of cases of extension of inflammation to small intestines.	Proportion.
196	172	36·7	22	11·2	23	11·7	26	13·2

—*Trans. Med. and Phys. Soc. Bombay, No. 8, New Series.*

ART. LXXXV.—*Association of Hepatic Abscess with Dysentery.*

"The association of hepatic abscess with dysentery may be here alluded to. It is not my intention to enter into any controversial consideration of the disputed question of the relation between them as cause and effect, but I may state that my own opinion sides with those who consider that the evidence derived from the records of practice in India does not support the theory first, I believe, advanced by Dr. Budd.

"In the 150 deaths by dysentery collected from the autopsy returns of this regiment, after the corrective scrutiny to which the whole have been subjected, 9 are not found in the autopsy reports, and 14 'not examined,' leaving 127 for analysis.

"In 99 of these cases, or in 77·95 per cent., no abscess was found; in 11 a solitary abscess existed; in 6 two abscesses; and in 11 three more: total number of cases in which hepatic abscess was found, 28, equal to 22·05 per cent. These results are certainly opposed to the theory of hepatic abscess being the *effect* of intestinal ulceration, for in 22·05 per cent. only of the fatal cases is abscess found.

"They support the opinion expressed by Dr. Morehead, that although we may admit that hepatic abscess may be '*occasionally*' induced by pyæmia, in the way suggested by Dr. Budd, as a '*general*' proposition' it is 'altogether at variance with the results of clinical research in India.'

"But 24 additional cases of hepatic abscess found in the returns, occurring under the head of hepatitis (21 cases), obstipatio (2 cases), and gastritis (1), raise the number to 52; in 41 of which there was co-existent ulceration of large intestine (dysentery), in 10 the colon was healthy, and 1 was 'not examined.'

"We obtain, then, 150 casualties from dysentery and hepatic abscess, the *post-mortem* reports of which are extant, and in which the results may be thus expressed :—

"Dysentery *without* hepatic abscess, 99 cases.

"Dysentery *with* hepatic abscess, 41 cases.

"Hepatic abscess without dysentery, 10 cases.

"These figures may be compared with those collated by Messrs. Waring and Eyre.

"Mr. Waring gives 633 cases of fatal dysentery, with hepatic abscess in 149; Mr. Eyre 118, with abscess in 27. The series I offer comprises 127 cases, with 28 instances of concomitant abscess, or, expressed in the ratio per cent. which hepatic abscess bears to the total cases of dysentery, the figures stand as in the margin; a

Mr. Waring's,	23.54 per cent.	striking similarity, as observed by
Mr. Eyre,	22.88 "	Mr. Eyre, adding additional force to
Cases from re-		his question, 'If the theory of the
records of the		formation of hepatic abscess be sound,
2nd E. L. I.,	22.05 "	how is it that 77 per cent. of dysen-
Mean . . .	22.823 "	tery had no hepatic disease?'"

Prevalence of Hepatic Abscess according to Length of Service.

On this point Mr. Ranking says:—

"Both sets of observations warrant the opinion that the risk of death by hepatic abscess is greatest in the first five years of service; that the risks decrease during the second period of five years, rise again in the third, and in the fourth are at the minimum.

"Length of service, in fact, as Mr. Waring states, 'confers a great immunity from suppuration of the liver.'"—*Mr. Ranking's Statistical Gleanings, Madras Quar. Journ. Med. Sc., July, 1863.*

ART. LXXXVI.—*Summary of a Case of Abscess of the Liver opening into the Pericardium.*

By H. V. CARTER, M.D.,
Assistant-Surgeon, Bombay.

This is a result of hepatic abscess which appears to be very unusual. The case occurred in an adult Mussulman.—*Trans. Med. and Phys. Soc., Bombay, No. 8, New Series.*

ART. LXXXVII.—*Case of Abscess of the Lung, simulating Abscess of the Liver.*

By SURGEON-MAJOR W. JOHNSON, M.D.,
17th Brigade, Royal Artillery.

Bombardier H. Gardiner, No. 4 Battery, 17th Brigade, R. A.

This patient came into hospital on the 11th of January, 1862, complaining of feeling weak and unwell, and had a pain in left hypochondrium, in the vicinity of left lobe of the liver, unattended by fever, and the patient presented the appearance of having been drinking, but there was no nausea or vomiting, or any headache. The

pain in left hypochondrium steadily increased, the pulse acquired both fulness and strength, and there was fever.

On the 13th, thoracic symptoms showed themselves, and there were present pain and oppression in chest, dyspnoea and cough, but the fever abated.

On the 22nd, attention was again directed to the liver, but the pain, weight, and uneasiness complained of were confined to the left side of the thorax and abdomen, and, after a prolonged examination, an obscure, globular, and somewhat firm tumour was found occupying the left hypochondrium, resembling an hypertrophied spleen, and the right side was not at all complained of. The cough increased, but there was little or no expectoration.

On the 23rd of the same month, the patient was suddenly seized with a paroxysm of coughing, accompanied by a copious expectoration of purulent matter mixed up with phlegm and mucus. Respiration became considerably embarrassed; large mucous *râles* over entire surface of left lung, and small crepitation. An abscess in left lobe of liver was thought to have burst through the left lung.

From this date the patient continued to expectorate variable quantities of pus, sometimes tinged with blood, and often copious; wearing away the strength and producing great prostration of the vital powers by keeping up a constant drain on the system, which required to be combated by stimulants and nourishing diet. A perseverance in this method of treatment for about three months was followed by evident signs of amendment and convalescence. The wine and brandy were now discontinued.

On the 20th May, however, a severe relapse occurred, preceded by strong rigors and fever, with a repetition of the purulent discharge from the left lung; but this time the hepatic organ remained undisturbed. The stethoscopic signs were those of pleuro-bronchitis, and latterly those of a cavity or abscess in inferior lobe of left lung.

The patient did not rally, but expired on the night of the 25th May, 1862.

Thorax and Abdomen.—Disease confined to left thoracic region, the *right lung* being found healthy, but the *heart* was slightly enlarged and flabby in texture, and somewhat displaced from its natural position, being found pushed partially to the right side and towards the mesial line. *Left lung*; its base and posterior half of its substance, throughout its entire length, considerably disorganized by tubercular and purulent deposits and hepatization; its anterior half being more or less crepitant and healthy. Sections of it found to float freely in water. The circumference of base of left lung adherent to corresponding portion of diaphragm and capsule of left lobe of liver. There were also strong and extensive pleuritic adhesions to the posterior and lateral sides of the thorax. A large irregular cavity or space existed between the diseased lung and pleura, occupying a posterior inferior aspect, containing but a small quantity of fetid, brownish, grumous pus, involving the parenchyma of the contiguous lung, communicating with its superior lobe, and discharging its contents through the ramifications of the bronchi on that side.

This abscess, however, had no connection whatever with the *liver* (as had been diagnosed during the lifetime of deceased), nor did there appear traces of any antecedent formation of hepatic abscess.

All other organs were healthy.—*Madras Quar. Journ. Med. Sc., No. 10.*

ART. LXXXVIII.—*Case of Abscess of the Spleen, discharged into the Left Lung.*

By A. A. MANTELL, M.D.,

Bengal Medical Service.

J. D., a European, and father of five healthy children, aged 62, and perfectly grey, was placed under my care on January 31 of the current year. He had just arrived in a boat from the coast, where he was employed by Government as a superintendent of a lighthouse. He was accompanied by his wife, who gave the following history of his case:—

She stated that during their thirty-seven years of married life he had always been a strong, healthy man; that as a pilot he had seen much service; and that for many years he had been a very free liver, his favourite drink being rum. He had not been subject to fever, but had had a slight attack of ague before his present illness set in. As far as she could recollect, he had never had any affection of the chest, nor had he ever complained of pains in the loins or abdomen. His appetite was always good, and his bowels invariably regular. His present illness commenced five months ago, with sore throat and difficulty in swallowing; he also complained of pain in the right side of his neck.

The soreness of the throat and difficulty of swallowing continued to increase, and on December 31 last he became much worse; on the following day he was unable to masticate his food, and his speech became thick. During the whole of this period his general health was good, but he was unable to take food in the solid form.

On January 25 he coughed up some dark-coloured blood and matter of a very offensive character. From this time his breathing became difficult, a hacking cough set in, and he daily expectorated small quantities of blood and matter.

On the evening of the 30th he was still worse, expectorating large quantities of the same kind of discharge, and unable to lie horizontally, in consequence of the extreme dyspnoea. During this night he had no sleep, and his wife did not expect him to live till morning.

I saw him for the first time on the following afternoon; he was sitting in a bent posture; his countenance was dusky, and his lips livid; he was at times delirious, and breathing with much noise and difficulty; he had a slight but frequent cough, and with it expectorated an offensive sanguineo-purulent fluid, of a dark brick colour.

He was free from fever, and had a tolerably strong pulse of 84.

His tongue was clean ; he complained only of his throat, and pointed to it as the seat of pain ; nothing, however, abnormal could be felt externally, or seen internally ; there was partial paralysis of his tongue, which rendered his speech thick and difficult to be understood. His lungs gave no evidence of disease, resonance was good on percussion, and the only abnormal sound present was a mucous *râle*. No enlargement of the liver or spleen could be detected ; and he did not complain of pain when his abdomen was examined by pressure and percussion. Ordered nourishing diet constantly, and a stimulant mixture.

February 1.—He has passed a restless night, especially the early part of it. At times he was delirious, and on several occasions it was feared he would be suffocated by the accumulation in his chest. This morning he appears somewhat better ; there is less delirium, his respiration is not so noisy, and the expectoration has somewhat abated ; his pulse is 86, and firm ; he walks about the room occasionally, in spite of orders to remain quiet, and once nearly fainted in consequence of the exertion. He passed urine once during the night ; it was clear, and of a natural colour. His bowels not having been relieved for two days, he was ordered an aperient draught.

2nd.—He appears much better this morning, as he has slept the greater part of the night ; his pulse is still 86, and of the same character. He can now lie in the horizontal position without much distress. From his improved condition prognosis more favourable. *2 P.M.*—At this hour I was summoned suddenly to see him, and on arrival found that alarming hæmoptysis had set in ; he had coughed up half a pint of pure blood. Nothing stopped the hæmorrhage, and in about twenty minutes he died.

Inspection Twenty-one Hours after Death.—Body pale, but well nourished considering his age. Brain not examined. On removing the trachea, pharynx, etc., the greater cornu of the hyoid bone of the right side was found in a state of caries, and the diseased part was surrounded by a small abscess, which had apparently burst into the upper part of the pharynx. The apex of the right lung was slightly adherent, and the bases of both lungs were firmly adherent to the diaphragm, especially the left ; their structure was healthy, but engorged with frothy blood and serum. Heart natural, with empty cavities. Liver smaller than usual, gall-bladder containing greenish bile, and one large black calculus. On endeavouring to remove the spleen, it was found adherent to the diaphragm, and so soft and pulpy that it broke to pieces under very slight pressure of the fingers ; the cause of this was an abscess which occupied its structure, and was now nearly empty ; the walls of it were thin, and what remained of the parenchyma was infiltrated with fetid matter and blood of a brick-red colour, similar to that which had been expectorated during life. The abscess had burst into the left lung, a communication being established between it and the spleen. The fatal hæmorrhage was due to rupture of a branch of the left pulmonary artery. The left kidney was hypertrophied, and the right contained an abscess the size of a hen's egg, filled with yellow matter. The stomach was lined with a thin layer of coagulated blood, which

had been swallowed during the fatal attack of hæmoptysis. The other viscera were healthy.

Remarks.—In remarking upon this case, I may start by saying that its nature was not suspected during life, nor was there a single diagnostic symptom present. That an abscess had communicated with the trachea, bronchi, or lungs, there could be no doubt, but its situation was not ascertainable. The disease of the *os hyoides* gave rise to the only symptoms complained of by the patient, viz. pain in the neck, and difficulty of mastication and deglutition, resulting, as they must have done, from irritation or destruction of the right hyoglossal nerve. The history of the case from the beginning in no way elucidated the disease; there had been no antecedent periodic fever of any severity or duration, nor had there been any symptoms of acute or chronic splenitis. The slight attack of ague, spoken of by his wife as having occurred before his present illness, was probably a shivering fit, happening at the suppurative period; but whether this was indicative of matter forming in the spleen, kidney, or throat, it is impossible to say. In consequence of the rarity of this affection, little has been written concerning it. Abercrombie mentions in his work on 'Diseases of the Stomach and other Viscera of the Abdomen,' that he never saw but one case of splenic abscess, and that its nature was not detected during life; in it the only symptoms were emaciation and debility, and after death the kidneys were found diseased. He records cases met with by others in which the abscess had burst twice into the colon, once into the cavity of the abdomen, once into the stomach, once at the umbilicus, and once after a blow received in the left side, which was followed by the subsidence of the tumour, and a discharge of thick and fetid matter with the urine. Dr. Morehead, in his excellent 'Clinical Researches on Disease in India,' published in 1856, states that he had never seen a case of abscess of the spleen. In Copeland's 'Medical Dictionary' I find the following remarks upon the disease:—"Abscess of the spleen is generally, but not necessarily, fatal: some cases of recovery said to have taken place are not very conclusive. The diagnosis appears to be always difficult." Dr. Nasse, of Bonn, has recorded the history of a case in which the matter made its way from the spleen through the diaphragm into the lung, and was expectorated in great quantities, the patient afterwards recovering. As abscess of the spleen is comparatively rare, such cases must necessarily be much more so; but there is no reason wherefore abscess in this organ should be less likely to be recovered from than abscess of the liver. Rokitsansky observes, that in a favourable case the abscess may be circumscribed by adhesive inflammation, and, being enclosed in a sac formed by obliterated parenchyma, which has been converted into fibrous tissue, may be borne for a long period; a partial absorption of the pus may take place, and, the remainder becoming inspissated, be reduced to a calcareous, greasy pulp, or even to a hard concretion. The more common termination of this disease is for the parietes of the abscess to put on inflammatory action and suppuration, by which the matter is discharged into—

part.—(Cuttack, Bengal.)—*Med. Times and*

ART. LXXXIX.—*Statistical Gleanings from the Records of the 2nd Madras European Light Infantry, now H.M. 105th Regiment, for the Years 1840 to 1860 inclusive.*

By J. L. RANKING,
Surgeon-Major, Madras Army.

In this long and carefully prepared paper, Mr. Ranking presents us with the medical history of the regiment from its formation in 1839 till the close of the year 1860. The whole of this period of twenty-one years was a service solely *in garrison*, so that no war casualties affect the returns of sickness and mortality. In the *historical sketch* we have an account of the stations the corps occupied, and the marches it made, with remarks on the most salient points bearing upon its general sanitary condition. It was stationed at Bangalore for four years, from 1841 to 1844, and the returns of sickness and mortality support the high character of this station for salubrity, the average ratio per cent. of deaths to strength being as follows:—

By ordinary disease	1·54
By cholera	·43

The other stations which the regiment occupied were Trichinopoly, Secunderabad, Madras, Tonghoo in Burmah, and Trichinopoly a second time. Our author next considers the *general statistics* of the corps, and gives a large Table, which furnishes the following results:—

NON-COMMISSIONED OFFICERS AND SOLDIERS.

Aggregate strength for the period	17,703
Admissions by disease	30,278
Died in hospital	384
Of mean strength } Admitted	1710·27
per 1000 } Died in hospital	21·69
Violent and accidental deaths not included in the above	48
Deaths "in other" hospitals	90
Total deaths in and "out of" hospital	522
Ratio per 1000 to strength of all deaths	29·48
Invalided, pensioned	247
Discharged on account of disease	154
Ratio per 1000 of strength by invaliding, pension, and discharge for disease	22·65
Discharged for other causes	209*
Total decrement by deaths in and out of hospital. Violent and accidental ditto in other hospitals. Pensioned, invalided, and "discharged for other causes"	1,132
Average annual rate of decrement from all causes	53·90

* This does not include 239 retirements under the amalgamation order.

At which rate a regiment of 1000 men would become extinct in 1855 years.

The above tabular statement places the mortality which has prevailed in this regiment in a very favourable light, when viewed in relation to the published statistics of the death-rate attaching to European troops in India and in this Presidency.

In evidence of this statement various authorities are quoted, and it is added :—

"To recapitulate—as regards deaths in hospital both to strength and admissions, the percentage has been lower in this regiment (the 2nd E.L.I.) than is exhibited in any mortuary returns for European troops, to which I have access, for the period observed.

"The almost uniform ratio of 'admissions' by disease to 'strength' in the Table just given is striking, and may be accepted as pretty satisfactory evidence that the diminished death-rate at the present day is really due to improved modes of practice combined with better care for the soldier, and not to any greater immunity from disease itself."

The following quotations contain many points of interest :—

"THE INFLUENCE OF 'AGE' AND 'SERVICE' UPON SICKNESS AND MORTALITY.—Inquiry has tended, as affirmed by many writers, to overthrow entirely the theory of acclimatization—'advance of age (and length of service) increasing in a remarkable degree the tendency to death amongst European troops serving in India.'

"I can question this proposition as relates to this regiment for a period of eight years only, as the earlier tables do not give the strength under different ages and periods of service.

"By this Table the highest mortality is met with at the period from 31 to 35 years of age (19·53 per 1000), and from 36 to 40 years (19·88); above 40 years it is 10·15, under 20 it is 13·24, and between the ages of 21 and 25 it is at its minimum (9·15).

"No regularly progressive rate, then, is observable; but mortality, with the one exception above noted, may certainly be said 'to increase with advancing years' up to forty years of age, but not beyond it, for after forty the death-rate falls.

"But the strength at that age is only 197, and moreover is probably made up largely of staff-sergeants and non-commissioned officers, whose sanitary relations differ from those influencing the rank and file."

Influence of Seasons upon Sickness and Mortality.

	Per 1000 of Aggregate Strength.	
"Cold Season	118·4	admitted, 0·84 died.
Hot Season	154·4	" 1·13 "
Wet Season	151·4	" 1·58 "

"The cold season, then, has both the lowest rate of admissions and deaths. The hot season has the highest rate of admissions with an increasing death-rate, while the largest mortality takes place in the wet months.

"Taking decrease in the aggregate, it is evident

ment, and for the period alluded to in, or embraced by, the tables framed, admissions and deaths have both been highest in the rainy months, or from July to October inclusive, and this quite agrees with remarks made in the Annual Report for 1861-62."

Evidences of Diminished Mortality from Bowel Complaints.

"The evidence, then, of a greatly decreased rate of mortality by this class of diseases in this regiment, in recent as compared with more remote periods, is conclusive, and can, I think, only be attributed to improved modes of treatment, together with more efficient 'sanitation,'—mainly, I believe, to the judicious use of ipecacuanha in the earlier stages of the disease."

Delirium Tremens.

"How can it be accounted for, that so large a number of cases as 519 have occurred in this regiment without a single death?"

"The reports, it is true, state that the disease complicated some fatal cases of dysentery: how many is not stated. But this fact offers no solution. The causes of fluctuation in the number of *admissions*—of the *prevalence*, that is, of intemperance—are patent, can be traced and accounted for; but the records do not afford information as to the causes which have operated so favourably in affecting the death-rate of so grave and frequently fatal a disease as delirium tremens.

"The treatment adopted, as far as can be gathered from the 'reports,' was mainly by stimulants and opium, or by the treatment known as 'Dr. Graves's.' In a word, it has comprised those therapeutic measures generally adopted by the profession.

"Any *special* treatment or management can scarcely then be advanced in explanation of the very low mortality.

The General Health of the Regiment.

"The low rate of mortality is doubtless very much dependent upon the continued life of ease and comfort which the regiment has led in *garrison*, and its exemption from the risks of field-service.

"The marked improvement in the health of the men, in late years, is a most gratifying fact, and there can be no question that improved sanitary relations, and especially *absence of overcrowding*, is the cause of this amelioration, and of the improvement in the health of European troops in India generally.

"The evidence, then, is to my mind most conclusive that overcrowding has been the principal cause of the high mortality which marks the records of this regiment in the earlier, as compared with the more recent, periods of its history.

"It is to this greater segregation of the men, the larger *breathing-room* enjoyed by each, that the reduction of mortality, in recent as compared with more remote periods, is *mainly* to be attributed,—a fact which still requires to be brought home to the authorities,

who do not yet sufficiently insist upon the troops having the minimum of space laid down by the regulations, viz. 1000 cubic feet, free of all encroachments by furniture, arms, and accoutrements.

"But although laying so much stress upon overcrowding as the *main* cause of the high mortality marking the more remote periods of this regiment's history, there is sufficient evidence borne upon the face of the 'returns' to show that the earnest attention paid to sanitary measures of late years, has, combined with the better treatment of disease generally, much to do with the reduced mortality; and I feel confident that the future of our medical statistics will prove that, provided the teachings and warnings of the past are not forgotten, the European soldier in this Presidency, in times of peace, runs scarcely more risk to health and life than attaches to troops serving in other parts of the globe; and that a *hospital* mortality of 62·45 per 1000, which Dr. Chevers has shown to be 'the average annual rate of mortality from all causes amongst men of H.M. and H.E.I. Co.'s European forces in the three Presidencies of India,' since the commencement of the present century, will be looked upon as a painful record of past shortcomings in the care and preservation of the soldier's health."—*Madras Quar. Journ. Med. Sc.*, July, 1863.

ART. XC.—*On the Temperature of Man within the Tropics.*

The observations on this subject were conducted during a period of three years and a half in the West Indies, and chiefly at Barbadoes, where the mean annual temperature of the atmosphere is about 80° Fahr., and the range of temperature throughout the year from about 10° to 18° in the open air.

From a minute and careful series of observations, Dr. Davy draws the following conclusions, which appear, he says, to be either proved or rendered probable, supposing that, were the observations extended to many individuals, no material discrepancy would be witnessed:—

"1. That the average temperature of man within the tropics is a little higher, nearly 1°, than in a temperate climate, such as that of England.

"2. That within the tropics, as had before been found in cooler regions, the temperature of the body is almost constantly fluctuating, —varying according to the variety of agencies to which it is subject, some of which are distinct, others obscure.

"3. That the order of fluctuation observed there is different from that of a cooler climate; the minimum degree of temperature being commonly early in the morning, after the night's rest, and not at night previously to going to rest.

"4. That all exertion, whether of body or mind. — very gentle, coming under the designation of *passive* —

tive exercise, has a heightening effect on the temperature ; while the latter, the passive kind, has rather a lowering tendency, especially carriage exercise.

"5. That heavy clothing, especially if tight and close, obstructing the admission and circulation of air, tends to raise the temperature unduly, especially under active exercise ; and that close, ill-ventilated rooms, especially when crowded, have in a marked manner the same tendency.

"6. That when the body is in a healthy state, then, on rest after exercise, or exposure to any other exciting cause, it rapidly recovers its normal condition as to temperature.

"7. That when labouring under disease, however slight, the temperature is abnormally elevated ; and that judging from observations made, but not recorded, in the tables, its undue degree is some criterion of the intensity of the diseased action.

"8. That within the tropics there is comparatively little difference of temperature between the surface of the body, especially the extremities and the internal parts, and that there the skin is more active in its functions of transpiration, and the kidneys are less active as secreting organs ; with which, it may be conjectured, is connected a rapid production and desquamation of cuticle, and the absence, in great part or entirely, of lithic acid in the urinary secretion. This latter fact, however, may be explained in a different manner, on the supposition that the acid is not formed in the blood, or if formed, in a greatly diminished quantity.

"9. That the effect of wine, unless used in great moderation, is commonly lowering—that is, as to temperature ; whilst it accelerates the heart's action, followed after awhile by an increase of temperature.

"10. That the tendency of sea-sickness is to check what may be considered the natural fluctuation of the temperature, and when severe, like disease, to elevate the temperature.

"11. That the tendency of a sea voyage, apart from sea-sickness, is to equalize the temperature without elevating it ; an equalization that is best witnessed in voyaging in a tropical sea, where the atmospheric temperature is so little variable.

"12. That even at sea, with a change of atmospheric temperature, there is a tendency to change of temperature of the body, the average increasing in proceeding towards the tropics and diminishing on receding from them. These conclusions obviously admit of application, and that variously in relation to health and disease. It would be unsuitable to the occasion to dwell on this part of the subject ; I shall merely remark, that it is a happy circumstance for man, and seems wisely ordered, that fluctuation of temperature should be connected with a healthy state of the system, and probably conducive to it, in whatever manner produced, whether by change of climate or atmospheric variation, or by exercise, whether of body or mind. The excellent health which the crews of the West Indian steam-packets have, that are in constant transition from heat to cold, is a striking proof of this ; and other instances of a like kind, were it necessary, might be adduced in confirmation."—*Physiological*

Researches, by Dr. John Davy, F.R.S., Insp.-Gen. of Army Hosp., p. 43 et seq.

ART. XCI.—Rapidity of Putrescence within the Tropics.

"It is well known to every one how rapidly meat becomes tender, and how very short a time it will keep, during the warm weather of summer, and how the contrary is noticeable in winter. Within the tropics, at a temperature of 80° and higher, so great is the proclivity to putrefy, that meat cannot be salted with a chance of its preservation unless immersed in brine as quickly as possible after the slaughtering of the animal—indeed, the pieces should be immersed whilst still warm. This aptness to putrescence necessitates in hot climates the speedy funeral of the deceased; a service commonly performed on the day of the fatal event, or, at the furthest, not beyond the following."—*Dr. J. Davy, Diseases of the Army, p. 10.*

ART. XCII.—On Leprosy as seen in India; with Remarks on the Eruption and Anæsthesia.

By ASSISTANT-SURGEON H. V. CARTER, M.D.,

Teacher of Anatomy and Physiology in the Medical College, Bombay.

In the Bombay Presidency leprosy is sufficiently common, especially among the residents of the numerous fishing villages and towns situated on the sea-coast. Dr. Carter's observations are based upon facts derived from the examination of about 180 cases, and from 13 *post-mortem* examinations conducted entirely by himself.

He regards the following method of viewing the disease as the simplest, if not the most scientific, viz. by regarding the chief phases, or groups of symptoms, it presents. These phases in leprosy are three in number :—

1. An eruption or affection of the skin, accompanied with anæsthesia, and probably allied to lepra (*Græcorum*).
2. An affection of the cutaneous nerves and superficially-placed nerve-trunks, and of the Pacinian corpuscles.
3. A tumefaction or tubercular thickening of the skin, and the mucous membrane of the palate and pharynx.

These groups of symptoms seldom, if ever, occur quite independently; but in all cases one or other will be found to predominate, and so determine the variety or form the disease has assumed.

The eruption in leprosy has never been fairly studied; it corresponds with the "*baras*" of the Arabian authors, and possibly with the "*leuke*" of the Greeks, and third species of vitiligo of Celsus.

The second of the above forms is that known as anæsthetic leprosy, and the third is the tubercular variety. V

their respective prevalence in India, and we may say the East generally, "baras" is common; it is possibly peculiar to these parts. Anæsthetic leprosy is much more frequent than the tubercular, with which however it is sometimes associated. The latter form of the disease is that generally described as leprosy until recent times, when the variety characterized by numbness and distortion of the extremities has been distinguished, and it is still the most prevalent form in some parts of Europe where the disease yet lingers. There is here a contrast similar to that which obtains, as regards the two chief forms of ague, in their respective frequency in England and in India. But, strictly speaking, these distinctions into species or varieties are not real, though practically they may be found convenient. "In the course of my observations," continues Dr. Carter, "I have had occasion to examine the morbid anatomy of the tubercular thickening of the skin, and it has seemed to me that it is owing to an effusion of similar character to that found in the nerve-trunks; indeed, I have always found the two associated, and they are probably referable to the same cause, whatever that may be. The precise relation of the eruption in leprosy to the other morbid signs is not easy to determine, but it is probably very close; and I am of opinion that the skin affection is peculiar, if not in typical character, yet in some of its modifications, to this great constitutional malady. Leprosy, in all its varieties, is decidedly hereditary."

Here follow remarks which refer more particularly to the skin and nerve affection, and some observations on a physiological question of much interest—the influence of the nerves upon nutrition, on which Dr. Carter has bestowed much careful research. As our abstract must be brief, we recommend the study of the original paper to all who are taking an interest in the inquiry on the subject of leprosy.

The Eruption in Leprosy.

In the most frequent varieties, and in the majority of individual instances, some kind of cutaneous affection may be seen, but occasionally the eruption is the most striking or prominent feature. Of the chief forms of eruption as seen at the present day, three or four varieties may be distinguished:—

1. The typical, consisting of spots or patches of a circular or annular form; size, three-quarters of an inch to three or four inches in diameter; edges raised, of a light red or pinkish hue, free from scales, cracked or wrinkled; centre depressed, pale, dry, glistening, a tendency to spread. The raised margin is slightly benumbed; the centre of the patches insensible. Their appearance is not preceded by any general symptoms, or even local signs of irritation; hyperæsthesia has not been noticed. The patches commonly occur about the shoulders (front) and hips (back); on the face, the temples and cheeks are frequent positions, sometimes where the branches of the fifth cranial nerve emerge; on the trunk, the back is oftenest the seat. There is more or less perfectly symmetrical arrangement of these spots. Squamæ, scabs, and discharge are absent; the hairs

on the patches are few and atrophied, but seldom blanched; the function of the glands of the skin is suspended or diminished.

It is probable that the eruption is essentially tubercular in character, beginning as it does by a small, reddish, flattened elevation of the whole skin; there is evident wasting of the part; the best examples are seen in adults; and in all, distinct evidence of anæsthetic leprosy co-existed with the eruption. The general health and bodily condition were good.

2. The second form consists of extensive patches occupying the back of the trunk, limbs, etc., their character is essentially similar to the last; they often embrace large segments of the trunk, or surround a limb like a broad bandage; their appearance is very striking, and, as in the last instance, anæsthetic leprosy generally co-exists.

3. The eruptions just described may be seen at the end of one year, or not fully developed for three or four; on careful examination fresh spots can generally be found, which display their real character. A more frequent appearance than either of the above is a light discoloured state of the skin, in the form of irregular, often large patches, of which the surface presents hardly any other visible change beyond that of colour. Here the tubercular character is reduced to a minimum, and the border is indicated by a narrow, level, reddish line, or by a level, lighter-coloured streak; the central parts having resumed more or less a tint approximating to that of the sound skin, retaining, however, their insensibility.

4. A fourth form is still more widely separated from the typical; it is probably peculiar to leprosy, and is not uncommon. The following case is an illustration:—Chavgi, a Hindoo female, aged 25. There have been spots on the body for twelve years; they first appeared on the left fore-arm; at present, a few round, pale spots, as large as a rupee, may be seen on the face; all over the shoulders, front and back, on the chest, abdomen and loins, and extending onwards to the extremities, where they become fainter, are light discolorations, almost white, and perfectly distinct even on her pale skin; they are generally well defined at their border, but towards the extremities pass gradually into a colour resembling that of the sound skin, portions of which have probably become enclosed within the circumference of the patches; the free edge often shows a circular disposition. Some recent spots on the back are decidedly circular in form, or occasionally oval, showing the faintest red edge, slightly raised; then a broad, light surface, and finally, in the centre, the colour may be almost white. The surface of the patches presents a rather coarse appearance, the clogged hair-follicles being visible as elongated dots; most of the hairs are white, thin, and short. There is marked anæsthesia in all the patches. The hands are small; they are benumbed, and the inner fingers are slightly distorted and shortened; the cuticle is apt to peel off the benumbed parts; otherwise well formed and in good health. Is married, but her husband drove her away when signs of leprosy made their appearance; had children, who are well. Her paternal uncle is a leper.

Amongst the numerous attendants at the Dispensary have been well-marked examples of that extensive blanching of the skin which is so striking and repugnant to the eye. The change seems to consist entirely in the non-formation of the cutaneous pigment; the functions of the skin are unaffected, and the general health remains good; the hands, feet, scrotum, or face, are usually first attacked, and finally the whole body acquires a tint similar to that of the palest European, with often a chalky hue; the hairs of the eyebrow are blanched, but the natural colour of the eyes persists. It has been suggested that one form of Jewish leprosy (the skin being "white as snow") is illustrated by this affection, and certainly, as far as appearance goes, no other example equally forcible could be adduced. Its connection with leprosy is not general, but long experience will be required to elucidate these and similar topics; in two or three cases facts in the affirmative have appeared, and also an hereditary tendency: it is called "Switra." An opposite condition of the skin, viz. a black discoloration, is not very uncommon; it seems to occur only on the face, and frequently over the branches of the fifth pair; sensation is not diminished, once it seemed increased. The tint may be compared to that of a black-leaded surface, or, again, the nitrate of silver stain.

In conclusion, it may be remarked that there is no evident connection between the "baras" in its various forms described above and a syphilitic taint; its essential relations to other signs of leprosy have been already pointed out, and baras is a serious complaint only as thus complicated; it does not itself tend to shorten life, but is a disfigurement.

In the "Remarks" which follow, Dr. Carter states that in his opinion the several varieties of eruption above referred to are but modifications of a typical form, and also, that they are peculiar to leprosy, nothing like them having been seen in any but leprosy patients.

Some historical details respecting the confounding of *lepra* and leprosy both by ancient and modern writers are next given, but at too great length for extract, so we pass on to the next head, viz.—

Anæsthetic Leprosy.

Impairment or loss of the tactile sense is the characteristic feature of this phase of the disease; this, when complete, is accompanied by an inability to appreciate differences of temperature or other kinds of irritation, as tickling, etc., but the first symptom noticed is loss of feeling, or numbness. In most cases only the limbs are affected; next in frequency the lobules of the ears and parts of the face, but rarely the trunk, except in places where it was probable one of the anæsthetic forms of eruption just described had previously existed. This remarkable symptom seems peculiar to leprosy, and the morbid anatomical condition upon which it depends is also equally unique. The careful dissection of parts ascertained to be paralysed during life have furnished satisfactory evidence that the NERVE-TRUNKS alone are primarily diseased. Another obser-

vation which naturally follows from these dissections indicates a further limitation of the morbid alteration to certain nerve-trunks only, viz. those larger ones which in certain parts of their course are superficially placed, and to the *cutaneous* branches of these or of independent nerves. But this subject has a physiological bearing of some interest; the extremities thus deprived of (sensory) nervous influence soon exhibit appearances which can only be attributed to this interference with their normal relations; atrophy and interstitial absorption take place, leading at length to the total loss of the hands and feet.

The following are some of the characters of anæsthetic leprosy:—
 1. Comparative frequency; out of 173 cases, 60 were considered to belong to this form, 30 to the mixed variety with the tubercular, and 47 to a combination with “*baras*.” This shows how common the nerve affection is; it is probably never absent in the advanced stages. 2. Age at which the symptoms make their appearance; very uncertain. 3. Males suffer much more frequently than females. 4. Occupation: several were fishermen, and all lived more or less on dried or salt fish and rice. 5. Duration of the disease will vary according to its intensity, from three years to thirty. 6. The natural mode of termination does not appear to be uniform; generally some exhausting disease, as dysentery, carries off the patient. 7. Neither fever nor a syphilitic taint is common, but an hereditary predisposition is undeniable. 8. Propagation of the disease by contagion is not a tenable doctrine. Dr. Carter has seen several leprosy husbands with healthy wives, and *vice versa*.

The following is a brief view of the symptoms—it is doubtful if there be any that are strictly premonitory:—local sensations of a burning, pricking, or shooting pain, susceptibility to cold, etc., are not uncommon in the fingers and toes; and there may co-exist tenderness on pressure, and shooting pains in the course of the ulnar and median nerves, etc. Generally, aching, wearing pains in the limbs are sometimes complained of, or a sense of weakness, the patient being unable to grasp firmly. The bullæ or blisters, ranked as characteristic of this form of leprosy, are frequent on the extremities; they seem to follow the anæsthesia, and it is then probable that a slight degree of heat, of local irritation or friction, will be an adequate cause for their occurrence, their most frequent seat being the parts of the hands and feet most exposed: sometimes, however, they occur in a perfectly spontaneous manner; their size is usually small, and form irregular; their contents serous, or sero-purulent; they sometimes dry up, leaving no mark behind; on bursting, there remains a superficial sore, which, when healed, has a white cicatrix. An eruption of the skin—some form indeed of *baras*, already described—very often co-exists with anæsthetic leprosy.

In the course of a few months, or longer, the disease becomes confirmed; the extent and degree of anæsthesia indubitably show that the nerve-trunks are deeply implicated. The skin of the hands and feet becomes dry and shrivelled, the fingers and toes atrophied and bent; soon absorption becomes evident in the diminishing size of the terminal phalanges: this proceeds slowly, but surely, till the

leper becomes a poor cripple ; his general health gives way, and the mental faculties partake of the debility, but are not otherwise affected, and the whole progress of these symptoms will depend greatly upon his outward circumstances, being hastened and aggravated by want and exposure. With reference to the *libido inextinguibilis*, it is not proven ; rather an opposite disposition has been evinced : some marry rather for some collateral advantage than lust ; these observations apply to the anæsthetic form of leprosy.

In respect to the *morbid anatomy*, it is stated that in none of the *post-mortem* examinations was the brain or spinal cord found diseased, but those nerve-trunks distributed to the affected parts were invariably found diseased ; they are enlarged, of a reddish-grey colour, mottled or streaked in appearance, and of firm consistence, though supple ; their investment of connective tissue, or neurilemma, is free from opacity or adhesion, so that there is no evidence whatever of inflammation. The funiculi of the nerves are the seat of the morbid changes, the nerve-tubules of which they are formed are separated and compressed by the development of a clear nucleated tissue amongst them, and eventually so much altered as to be even wholly destroyed. (*Vide* vol. xiii. of the Transactions of the Pathological Society of London, page 13.)

In further illustration of the striking peculiarity of the morbid lesion, Dr. Carter points out, first, that the latter is not only confined to cutaneous nerves, but to those nerves only after they have emerged from beneath the fascia and muscles which may have overlaid them in the first part of their course ; second, in a nerve-fasciculus only some of the tubules may be affected : this is hardly to be detected by the unaided eye, but is very evident with a low microscopic power.

After enumerating the nerves oftenest found diseased, Dr. Carter concludes his most interesting paper with some physiological remarks, from which we have only space for the following extract :—“ Unmistakable symptoms during life, and repeated dissections after death, establish the conjunction, if not the order of precedence, of two phenomena, viz. disease of a nerve of mixed function, or sentient only (and in the case of the first it may be of the sentient tubules only for there is nothing in my observations to gainsay the supposition, and the occasional persistence of power over the muscles would seem to require such limitation), and changes in the parts it supplies, and those only. Whether these phenomena be regarded as cause and effect, individual temperament may induce my readers to variously decide.”—*Brit. and For. Med. Chir. Rev.*

In the Transactions of the Medical and Physical Society of Bombay, no. 8, new series, another very able paper by Dr. Carter, “On the Symptoms and Morbid Anatomy of Leprosy, with Remarks,” will be found. It deserves the close perusal of all who are interested in the subject, but we can only allude to one or two points not noticed in the preceding article.

In reference to *contagion*, Dr. Carter states positively that the disease is not communicated by contact, or through the air ; whether it is inoculable may be questioned. *Hereditary predisposition* is undoubted.

The following are Dr. Carter's concluding remarks :—

"The pathology of leprosy in India is a subject of inquiry well deserving investigation. This disease is doubtless associated with well-known hygienic conditions ; but it has also a special diathesis, which, as it seems to me, most nearly approaches the syphilitic. Both result in the effusion of a low-organized deposit in the skin and nervous system ; in constitutional syphilis, however, many of the internal organs of the body, as the brain, liver, etc., are affected ; this is not the case in leprosy, the advent of which, too, is not generally preceded by syphilitic infection. Direct and methodical observations would alone afford data for profitable speculation ; these have not been carried out, hence little or nothing of value can yet be advanced on this interesting topic.

"As to the treatment of leprosy, few words can be needed, in the present state of therapeutics, to indicate its futility in confirmed cases. The question must rather be, by what means can we arrest or prevent the effusion in the skin or amongst the nerve-tubules ; for after a time, its re-absorption, even if possible, will be of little advantage,—the nerve is destroyed. Alkalies and the iodide of potassium have certainly seemed beneficial in some of the many cases they have been tried in, but they usually failed. Mercury has never been fully pushed, so as to affect the mouth, for evident reasons. Arsenic has always been inefficacious in bars. Local applications (of iodine, mercury, or stimulants) have never done palpable good, though long continued. Indigenous remedies I have not tried, being sceptical, on pathological grounds, of their superior efficacy to the above. Galvanism would be worth testing where it can be efficiently applied ; but as yet no attempt at cure has, in my hands, succeeded in effecting more than an apparent retardation of the symptoms, in the earliest and most favourable cases."*

* A committee appointed by the Royal College of Physicians at the wish of the Government, to consider the value of the evidence in favour of the contagiousness or otherwise of leprosy, have reported that they have received sixty replies to the questions addressed by them (through the Colonial and Foreign Offices) to different colonies, as well as from places in Turkey, from Sierra Leone, Tunis, Cairo, Ceylon, Hongkong, etc. ; and, also, that they have received replies from medical men in England. In these replies there are forty-five decided opinions given that leprosy is not contagious ; in nine the disease is pronounced contagious, but no good evidence of the fact is adduced ; in the other twelve no opinion is expressed. The committee, therefore, consider that the weight of evidence is greatly in favour of the non-contagiousness of leprosy, and that the replies given contain no evidence which justifies any measures being resorted to for the compulsory segregation of lepers. The effect of this recommendation will, of course, be to set at liberty any unfortunate individuals who may be kept in confinement under the idea of the contagiousness of leprosy, in any part of her Majesty's dominions. The result of the appointment of the committee is an additional proof of the utility of such a body as the College of Physicians, to which the Government can refer questions demanding the application of medical science and observation for their solution.

ART. XCIII.—*Notes on the Treatment of Delirium Tremens.*

By WILLIAM HANBURY, A.B.,

Surgeon, 33rd (Duke of Wellington's) Regiment.

These notes from the able pen of Mr. Hanbury are full of practical interest. After alluding to the change of opinion in regard to the treatment of this disease, and especially as respects the merits of the use of opium, he observes :—

“During the last few years, the cases which have come under my observation have been successfully treated by the use of stimulants (brandy and porter) in limited quantities, and concentrated nourishment during the first two or three days of the affection, followed at the end of that time by the exhibition of opium in anodyne doses at night. The small amount of that medicine, when thus administered, which generally sufficed to induce curative sleep, seemed to suggest that its use could be dispensed with, and that the disease might be left—as far as this medicine was concerned—to the efforts of nature alone, and accordingly an opportunity was taken advantage of to test by experience how far the supposition would prove correct.

“An old and very dissipated soldier, who had been previously treated in the way just indicated, suffered from delirium tremens twice subsequently, and on each of these occasions the characteristic symptoms subsided under the use of stimulants and nutritious food, chiefly beef-tea and egg-flip. Somewhat later a sergeant, much addicted to drink, was admitted with dysentery, aggravated, if not caused, by this military vice. At the end of two days the symptoms of delirium tremens became developed, and the cure was trusted to nature alone, aided by nutrients and stimulants, and again with a favourable result.

“A short time after the occurrence of the last case, I was consulted regarding the condition of a man, of very drunken habits, affected by the disease, and who had taken several large doses of opium prescribed in the usual manner. He was delirious and in imminent danger of sinking. The face was collapsed and bedewed with a cold sweat, the pulse was small, rapid, and feeble, and the hands tremulous ; and as some cases of cholera were under treatment in the hospital at the time, the impression suggested itself that he had already reached the collapsed stage of that disease. A little consideration, however, of the attending circumstances of the case, left no room to doubt that the prostration was due to the unfavourable action of the opium exhibited, and I recommended that its further use should be discontinued, and that brandy and porter, with nutritious diet, should be had recourse to. The effect of this change of treatment was very remarkable, and well calculated to make a deep impression. The pulse rallied, the skin became warm, active diaphoresis succeeded to passive serous exudation. A tranquil manner and calm expression of countenance were substituted for nervous tremor and low delirium, and in about thirty hours after the opium was omitted he fell into a quiet sleep, and awoke, cured, at the end of ten hours.

“The injurious influence of opium, and the sufficiency of the ex-

pectant or non-*'therapeutic'* treatment to effect a cure, were well demonstrated in this case, and I have been informed by the gentleman who had first to do with it, that the treatment, *'without opium,'* was also successful in two instances which have since come under his notice."

Mr. Hanbury next alludes to the effects of digitalis in this disease, and submits in detail the history of a severe case in which its use in large doses was most satisfactory. The following are his concluding remarks :—

"On the whole, then, the result of late inquiry and discussion must be assumed to be a more intimate knowledge of the real nature of the disease. There can no longer exist a doubt that the use of opium at an early period of the affection is not only contra-indicated, but that nutrients and rest are more nearly concerned with its successful treatment than the stimulants with which these remedies have been usually associated. Nor shall we be likely to fall into much error in the event of stimulants being considered necessary in any particular case, if we administer them under the guidance of those general principles which are recognized in the management of other diseases.

"Lastly, with respect to digitalis. It will have been noticed that it acted in the case last detailed, to use a common expression, like a charm, though exhibited at a very critical period of the disease; and were this its invariable effect, the treatment of the affection would doubtless be greatly reduced in simplicity, and many anxieties attending it would be removed. But instances of its unfavourable action have been cited, and it still remains to be shown what are the conditions under which it may be had recourse to with least risk of failure.

"I believe it has hitherto proved most useful when not exhibited at too early a stage of the disease, and it may probably be found, as with opium, that large doses from the first invasion of the symptoms are less safe and effectual than smaller ones given at a later date, and after some time has been allowed for the natural evolution of the disease. Moreover, if it be true, as Dr. H. Jones suggests, that digitalis exerts a tonic influence on the heart and increases the contractile force of that organ, so far from being inadmissible in the low state of nervous agitation with muttering delirium verging on coma observed in extreme cases, it should here prove especially applicable. Experience, however, must alone determine this point; but in the meantime, and before resorting to the use of digitalis, it will be considered no more than judicious to adopt means calculated to restore the powers of nature, of a kind somewhat similar to those referred to in the case which has called forth these observations."—*Madras Quar. Journ. Med. Sc., July, 1863.*

ART. XCIV.—*Delirium Tremens in the European General Hospital, Bombay, during the five Years 1857–1861.*

By A. H. LEITH, M.D.,

Deputy Inspector-General of Hospitals.

The author commences his interesting and valuable communication by explaining the grounds upon which he has been led to distinguish "delirium tremens" from the milder affection, which he terms "ebrietas," and which corresponds to the first stage of the disease as commonly accepted; but the statistics of both affections are contained in his elaborate Table showing the admissions and deaths, during five complete years, in the European General Hospital. From this Table it is calculated that the ratio of mortality on the admissions was from delirium tremens 5·24 per cent., from ebrietas, 1·47 per cent., and from delirium tremens and ebrietas together, 2·20 per cent.; the total number of admissions being 77·2, and of deaths 17. The majority of the deaths were of the first species, or that which follows a debauch more or less prolonged, and is attended with vascular excitement. The influence of *seasons* and occupations: the age of the patients are next treated of, the latter being somewhat over the age of patients in general; the liquor the patients had been drinking was most commonly brandy. Dr. Leith considers that all kinds of liquor have a similar effect, and that it is erroneous to imagine that only the bad or drugged liquor does harm. The accession of delirium often comes on while drinking, but sometimes after an interval of forty or fifty hours; occasionally a relapse of delirium takes place, and the author has collected no fewer than 23 cases in which this "secondary" delirium occurred, and he gives a striking example; 5 such cases were amongst the fatal ones, and in these the secondary delirium was of a violent character and ended in convulsions. Irritability of *stomach* was not frequent. No particular state of the *tongue* exclusively pertains to either variety of the disease, nor were the bowels in any uniform state; the *skin* is generally natural, sometimes hot, especially in fatal cases; redness of the eyes was occasionally present, especially after long sleeplessness. *Pulse*.—Dr. Leith well remarks the influence of position on the pulse; his figures were obtained when the patients were either lying or sitting; they show an average of from 80 to 100 per minute as the most common: in the fatal cases the pulse was over 100, and once upwards of 130. *Tremor* was generally present and sometimes severe; *convulsions* occurred in all the fatal cases except one, being succeeded by coma, and they indicate very great danger; *sleeplessness* was a constant feature of the disease and usually preceded it. The *delirium* varied much in character and degree. Dr. Leith gives an elaborate summary of his observations of this point, quoting numerous illustrations. *Vertigo* was often observed, and in relation with these symptoms the author remarks that two confirmed drunkards at length became insane. The duration of delirium is next treated of; it mostly lasted upwards of three days.

Dr. Leith having long carefully noted the condition of the pupil, presents us with the results of his observations as follows:—

“From the iris remaining sensitive, the pupil may vary in size according to the amount of light to which the eye is exposed, but with a fixed amount of light it is larger during the delirium than it is with the same amount of light after recovery.

“When convulsions threaten, the dilatation was great, and during the convulsions the iris was often nearly invisible. In some prolonged cases uninfluenced by alcoholic liquor or medicine, the pupil was observed to increase in size while the delirium advanced in severity, and to decrease when the delirium became less engrossing and when sleep approached.

“From the mean of observations in 106 patients, the diameter of the pupil was $\cdot355$ of the diameter of the clear cornea during delirium, and but $\cdot248$ of the diameter of the clear cornea after recovery; and as circles are to each other as the squares of their diameters, the area of the pupil was doubled during delirium, being as 100 to 49. Among these 106 cases there were 7 in which the pupil was the same after recovery as it was during delirium, but in none of them was it smaller during delirium, and in no other case was it observed to be so, except where opium had been taken.

“In further analysing these observations on the pupil, it is found that in 58 who were admitted delirious, and who had been drinking up to the time of admission, the diameter of the pupil was during delirium $\cdot355$ of that of the clear cornea, and after recovery it was $\cdot253$, which, by the rule which makes circles to each other as the squares of their diameters, gives a ratio of 100 to 51. It is further found that in 32 cases in which delirium did not begin until twenty-four hours or more had elapsed after drinking had ceased, the mean diameters during and after delirium were respectively $\cdot348$ and $\cdot233$, which give areas of the ratio 100 to 45. Thus, in the former group, notwithstanding the mydriatic effect of the alcohol recently drunk, the delirium was less potential in dilating the pupil than the delirium in the latter group, in which it came on after a considerable interval.”

Dr. Leith's remarks on treatment are very practical and suggestive. As a general rule, he gives no medicine: alimentation along with quiet generally suffice.

“The treatment was not uniform; but in the cases that were under my own immediate care, no medicine, as a general rule, was given, unless some concurrent disease seemed to call for it; and as it happened that in none of these was opium in any form imperatively requisite, none was given by me. I was thus the better able to observe the natural course of the disease. The exceptions to this rule among the uncomplicated cases were two, to whom some doses of aromatic spirit of ammonia were given with the broth, on account of alarming depression, and three others, who had each an aperient to remove constipation.

“In the treatment, seclusion and as much quiet as could be commanded were enforced. There was often at first a fear of being shut up alone, but it soon passed off. There were, however, exceptional cases, in which the dread, inspired by their delusions and hal-

lucinations, was overpowering; and in such, an attendant was placed in the room with the patient, and also, as in the case last given, where a patient in a weak and exhausted state was over-exerting himself in moving after or struggling with phantoms, an attendant remained beside him to induce him by persuasion to keep to his bed, thus averting the probable accession of convulsions or collapse. It sometimes happened that the patient was so outrageously violent, that, to prevent his self-destruction, or his doing grievous injury to others, he was secured with sheets to his cot. This measure was used in one of the cases of attempted suicide; the man had, before admission, jumped into the sea from a boat, and after being brought to hospital he tried to destroy himself by butting with his head against the wall, and wounded the scalp severely. This means of restraint was not resorted to by me except in like extreme necessity; the effect, where it was used, was generally salutary, as the patient, when he found himself to be powerless, ceased to struggle. . . .

"When there was disproportionate heat of head, or when in robust men there was much excitement, either mental or vascular, cold affusion to the head was had recourse to; sometimes a hot pediluvium being at the same time used, or cold wet cloths were kept on the forehead. In the weakly, the injury that might ensue from the over-depressing effect of the cold applications was kept in view.

"Sanguineous depletion by leeches was ordered in two of the patients on account of acute dysentery; in three who had fever with inordinate heat of head, a few were applied to the temples; and in two others, in whom there was no complication, and in whom there were convulsions, a few leeches were applied to the temples: one of these last recovered; in the other, the convulsions, which had been accompanied with much flushing of face, intermitted for some hours, but then returned, and proved fatal. In former years I had experience of depletion among high-fed, robust, well-exercised men, in whom the disease was almost always from a debauch and not from long-continued tipping, and it was borne well by them and no untoward consequence followed. Now, from further observation, I think, as a rule, depletion is unnecessary even in such cases: among habitual drunkards I deem it to be very hazardous.

"Alimentation along with quiet I consider to be the most important part of the treatment of delirium tremens, and this was carefully followed, except in the few who had pyrexia and much vascular excitement: in them the quiet only was sought. Irritability of stomach, if present on admission, ceased now that alcoholic liquors were discontinued, and aliment was retained. Besides the ordinary hospital diet with meat at dinner, strong broth with bread was given day and night every six, four, or even every three hours, or this was alternated with sago. In every case all alcoholic drink was at once stopped, and in no instance was this abrupt discontinuance of the accustomed stimulus to be regretted; on the contrary, it was beneficial, because the stomach became retentive of food which it before loathed. It is besides of no small importance as regards the future welfare of the patient that no impression should be made or

left on his mind that liquor had become necessary in his case. As an instance of the safety with which the habitual use of alcoholic liquor may be at once stopped, I give the following from my private notes of cases among another class of the community.

"Of the whole 210 cases, there were, without counting 5 who had merely an aperient dose or enema, 53 who had medicine, and there were 157 who had none. Of the 53 who had medicine, there were 27 to whom it was given on account of concurrent diseases, namely, 6 who for fever had small doses of nitrate of potass and antimony, and 1 who had quinine; 9 had chalk, or chalk and catechu, for diarrhoea; 2 had ipecacuan, and were leeches for dysentery; 8 had opiates for diarrhoea and dysentery; 1 had antimony for pneumonia, and 1 who had fracture took opium.

"All the 11 patients who died were habitual drunkards: 3 had fever, probably the result of exposure to the sun; 3 had convulsions on admission; in 4 they subsequently came on; 1 patient sank exhausted from a complication of chronic dysentery."—*Proc. and Transac. Med. and Phys. Society of Bombay, No. 8, New Series.*

ART. XCV.—*Cases of Delirium Tremens, with Observations.*

By SURGEON-MAJOR A. BLACKLOCK,

Physician, General Hospital, Prof. of Medicine, etc.

After relating 9 cases, and making certain remarks, our author proceeds to say that during the last five years, commencing 1st January, 1858, there had been 41 cases of delirium tremens, and 6 of them had died. There had been during the same time 426 admissions for drunkenness; some of the cases having required prompt assistance to prevent death from coma.

"During the last three years the average residence in hospital of European military cases of ebrietas has been seven days, and of civil Europeans eight days. These cases have been always put as soon as possible after admission on a diet of chicken mullagatawny. It is always well boiled, and contains, for such cases, plenty of spice and garlic and a little red pepper. Given cold to the patient as a drink, it is almost always much relished and easily retained when other kinds of food are declined, or rejected almost as soon as taken.

"An adequate supply of this kind of nutritive food alone, especially if preceded by a smart purgative, will, in a great majority of cases of ebrietas, even where the dissipation has been excessive, be quite sufficient to prevent the accession of delirium tremens. If vomiting be present, there is little likelihood of the latter disease coming on, so long as the vomiting is not interfered with. Vomiting cases, indeed, are almost always good cases. It is better, therefore, rather

to allow the patient to go without food for a time than to check vomiting."

Mr. Blacklock discusses very fully the treatment of the asthenic form of the disease and its occasional complications, but we are obliged to confine our notice to the short summary which concludes this thoroughly practical paper.

"I shall now conclude with a short summary of what I consider the best treatment for the asthenic form of the disease.

"I. When any one is brought under treatment on account of continued ebrietas, every endeavour should be made to prevent the occurrence of delirium tremens. With this view, he should be made to take a brisk purgative even before he is quite sober. If an emetic have been given, followed by ounce doses of acetate of ammonia and draughts of plain cold coffee during the period of intoxication, so much the better. He should then be placed in a cool airy room, well washed as soon as possible, fed with spiced soup, and, in marked cases, after the second day of soberness, allowed a pint or two of egg-flip in the evening. If the man have been drinking during a week or ten days, decoction of garlic should be administered from an early period.

"II. The asthenic form of delirium tremens is invariably remittent, the delirium and restlessness being comparatively moderate during the day, and aggravated from sunset to sunrise. Diligent use should therefore be made of the day. Nourishment should also be given through the night, but there is no certainty of food being taken except during the day.

"III. There is, in all uncomplicated cases in which secretion, excretion, and nutrition have been encouraged, or, at least, not interfered with, an intermission of symptoms and a sleep of three to six hours at the end of the third day, and complete resolution by prolonged sleep at the commencement of the fifth day.

"IV. The best treatment, in my opinion, is:—1st. Free purgation. 2nd. Nutritive spiced soup given cold as a drink from a basin or tumbler, and alternating with draughts of egg-flip or other tonic and calnative nutritive. 3rd. Early in the morning cool sweet tea with two or three eggs beat up in it is very grateful to the patient, then much exhausted by the long exacerbation. 4th. Medicines, as superphosphate of lime and decoction of garlic, which act as stimulants to blood and tissue nutrition. 5th. Care should be taken to induce the patient occasionally to drink a sufficient quantity of cold tea or water, especially in perspiring cases, to replace the constant loss of fluid, and encourage oxygenation and general depuration. In delirium tremens, as in low fevers, the patient does not speak of thirst, although requiring water very much; and the general irritability is often much increased merely by this want. If he refuse plain water, he will readily take water which has been coloured by burned bread, or by a few drops of compound tincture of lavender, and presented clear and sparkling in a tumbler. Of course, the water should be given between meals.

"V. Complications, although often of the greatest importance in determining the result of the case, are yet of secondary conse-

ration in the treatment so long as delirium tremens is present. Some complications, as convulsions, may be prevented by cool air, freedom from disturbance, purgatives, diluents, and nutriment. Others, as moderate enlargement of the liver, occasioned by loss of tone of its nervous and organic fibres, yield to cool air, abstinence from spirits, and persistent employment of good diet, followed by mineral tonics and occasional warm purgatives. More serious lesions of that organ or of the kidneys or other viscera, or unusual obesity, are almost certain to lead to a fatal result at an early period after delirium tremens appears; and as in Cases III. and IX., the delirium, but for a knowledge of its antecedents, is sometimes not readily distinguishable from the ordinary delirium of the dying."—*Madras Quar. Journ. Med. Sc., No. 11, Jan.*

ART. XCVI.—Hospital Statistics of European and Native Troops, Prisoners in Jails, and the Police Force, in the Bombay Presidency, for five Years, from 1856 to 1860.

By W. C. COLES, M.D.,
Bombay Army.

These Tables relate to the eventful period of the Persian War and the mutinies in India. Tables No. 1 and 2 embrace the statistics of the European troops. Under this head Dr. Coles says:—

"If we compare, then, the total number of European soldiers treated in hospital during these five years with the strength of the British Forces during the same period, we find it as 159,378 is to 87,061, that is, about 187 per cent., or in other words, every 1000 men passed through the hospital 1876 times. The year in which there was the largest amount of sickness was 1858, the 'treated' in hospital amounted to upwards of 50,000, whilst the 'strength' was about 21,500, the proportion being 223 per cent., or 2237 per 1000 strength.

"*Mortality.*—The total number of deaths for the five years was 2424. The largest number occurred in the year 1858, viz. 776; then in 1857, viz. 547; next in 1859, viz. 482; then in 1860, viz. 425; and in 1856 only 194. Judged according to strength, the total average mortality was 27 per 1000—being in 1858, 36; in 1860, 30; in 1859, 29; in 1857, 21; and in 1856, 19 per 1000. The highest percentage of deaths to treated was in Oude and in Bengal, where, during the years 1857 and 1858, 353 European soldiers of the Bombay troops died; of these it will be seen that 127 fell a prey to cholera, and 76 lost their lives from wounds and injuries; the percentage of mortality to strength being 174 per 1000, and of mortality to treated, 73.

"The average rate of deaths to strength is highest at the Presidency, viz. 43 per 1000. This high rate of mortality in Bombay

has been pretty constantly observed, and is said to be due to the circumstance of invalids arriving from all other stations to proceed to England, and in many cases dying previous to embarkation. The Tables notably illustrate the above remark.

"Aden enjoys the privilege of exhibiting the lowest death-rate of any station for European troops in the Bombay Presidency. During the five years from 1856 to 1860 the range was from 3 to 24 deaths per 1000 of strength, the general average of the five years being 12 per 1000. In one year indeed (1859) not a single death happened to a European soldier at Aden, and in the five years under consideration there was a total of only 21 deaths, a little more than 5 per annum. Of these 21 deaths, 8 were ascribed to fever, 3 to diseases of the lungs, and 2 each to diseases of the stomach and bowels, to diseases of the brain, to dropsies, to wounds and other diseases, but there was not a single instance of cholera.

" Tables No. 3 and 4.—Native Troops.

"The strength of native troops during the five years from 1856 to 1860 did not much vary. In 1856 it was a little over 35,000, and in 1860 about as much under 34,000. It increased in 1858 to about 38,000, and in 1859 to above 40,000, but fell the next year to 37,000.

"*Mortality.*—There were 2162 deaths amongst native troops during the five years, which, with reference to strength, is about 11 per 1000; the mortality of European troops in the same situations and for the same periods was about 27 per 1000 men. The chief causes of death were fevers, from which 611 casualties happened, or 28 per cent.; then cholera, 339 cases, or 15 per cent.; diseases of the lungs, 287 cases, or 13 per cent.; diseases of the stomach and bowels, 280 cases, or 13 per cent.; other diseases, 206 cases, or 9 per cent.; wounds and injuries, 111 cases, or 5 per cent.

" Tables No. 5 and 6.—Jails.

"The number of prisoners confined in jails in the Bombay Presidency and in Scind during the five years from 1856 to 1860 was a little over 6000 per annum. In 1858 the number exceeded 6500, and in 1860 there were fewer than in 1856. The largest number of prisoners is in the Poona and Scind divisions, the smallest at Aden, —only from 150 to 170.

"There were 379 prisoners sick in all the jails throughout the Presidency at the beginning of 1856, and at the close of 1860 only 226 remained in hospital. During the five years there had been 45,411 admissions into hospital, and 1218 deaths. The average ratio of '*treated to strength*' was about 1500 per 1000 individuals; the mortality to strength was about 38 per 1000; and the deaths to the number per 1000 treated, about 25.

"*Mortality.*—The chief diseases which prove fatal to prisoners may be classified as follows:—diseases of the stomach and bowels, 25 per cent.; scurvy and other diseases, about 24 per cent.;

cholera, nearly 15 per cent.; fever, 14 per cent.: diseases of the lungs, 11 per cent., etc."—*Trans. Med. and Phys. Soc., Bombay, No. 8, New Series.*

ART. XCVII.—*On the Connection between a Local Affection of the Lymphatic System and Chylous Urine, with Remarks on the Pathology of the Disease.*

By H. V. CARTER, M.D.,

Professor of Anatomy and Physiology, Bombay Medical College.

"Dr. Carter relates the history of three cases, in which there was derangement of the lymphatic system, leading to local accumulations of chyle, its occasional discharge from the cutaneous surface, or its appearance in the urine. These phenomena sometimes occur together, sometimes separately. In one of the cases there was a small pimple on the surface of the thigh near Poupart's ligament, and from this point a milky fluid was poured out, and sometimes so copiously that in the course of the day a pint was obtained. The fluid, when collected, resembled rich milk; its colour was yellowish or bluish-white, but it soon acquired a rather pink tint. It had a faint odour and a slightly alkaline reaction, and on standing in a test-tube it separated into clot and serum. The microscopic examination revealed the presence of groups of minute granules, red blood-corpuscles, oil-globules of various sizes, granular corpuscles, and a few masses of granules. Instances of the more ordinary forms of chylous urine are said by Dr. Carter to be not uncommon in India. The explanation of the phenomenon of chylous urine is difficult, but Dr. Carter supposes that the distension of the delicate lymphatics and lacteals in the lumbar region is at length followed by exudation of their contents at one or more points; or when rupture takes place, a fistulous orifice remains, giving occasional free exit to the chyle or lymph; or an abnormal reservoir may be formed, which periodically discharges its contents into the pelvis of the kidney, ureter, or bladder."—*Med.-Chir. Trans., vol. xlv., and Brit. and For. Med.-Chir. Rev., July, 1863.*

ART. XCVIII.—*On the Treatment of Goitre with the Biniodide-of-Mercury Ointment.*

By N. C. MACNAMARA, *Beng. Med. Service, and*

Mr. A. M. GREENHOW, Beng. Med. Service.

We desire to draw attention to the great success which has attended this mode of treatment in the most formidable cases of goitre. During the past six years many thousands of cases have been treated by medical officers stationed in several districts at the foot

of the Himalayas, in Bengal, where goitre is endemic to such an extent, that in some parts of Tirhoot it is almost the exception to meet a man not having a goitre, and the district contains some three millions of inhabitants.

Mr. Macnamara, who, at the dispensary under his charge, had treated 23,000 cases in three years, states that the ointment he has been in the habit of using contains fifteen grains of the biniodide to an ounce of simple cerate; if a stronger ointment is used, unnecessary pain is caused, and a troublesome sore may be the result.

The ointment must be smeared all over the goitre, and should not be wiped off. The light should have free access to the part, and, if possible, make the patient sit down in the sun, the direct rays of which assist the action of the drug. In half an hour the skin will commence to burn, and in another hour a blister will have formed, which can be treated with a little simple ointment. The effects of the biniodide when applied over a goitre continue long after the blister, which it has caused, has healed up; the tumour will continue to decrease day by day for a month or six weeks, and even for the cure of the largest goitre the ointment should not be used more frequently than once in every two months.

Mr. Greenhow used an ointment composed of 3 lbs. of lard or fat and 12 drachms of biniodide of mercury. After this ointment was smeared over the goitre, the patient sat in the sun with his neck well exposed. The effect was apparent in an hour or two, for a blister rose; but in the course of a week or ten days this healed, and left the tumours, if not completely cured, at least very greatly diminished. It is suggested that in western countries, where the sun is not powerful, a roasting fire might supply its place and raise the required blister.

Mr. Macnamara has seen the worst and most intractable cases of enlargement of the spleen cured by this biniodide-of-mercury ointment applied over the enlarged organ, as described for the cure of goitre. He also employs it in glandular enlargements about the neck and groin, and in cases of nodes, and even as a convenient mode of counter-irritation in rheumatism and allied affections: in such cases the ointment should be made in the proportion of ten grains to the ounce.—*Indian An. Med. Sci. No. 15, and Med. Times and Gazette, Nov. 30, 1861.*

In the 'Lancet,' October 10th, 1863, there will be found a communication on this subject from Mr. Wishaw, Civil Surgeon, Fyzabad, Oudh, in which he points out the great success of the treatment, and how much it is appreciated by the natives, as many as 3611 patients having been treated during four months, viz. in November and December, 1862, and January and February, 1863. He remarks:—"Each goitre is measured with a tape and callipers, and the dimensions noted for the purpose of comparison. Small goitres, such as are seen in England, are quite cured by one application, but those of larger size require three or four to complete their removal." The most remarkable he had seen in the Government Dispensary was that of a woman whose goitre measured nearly five feet in circumference, hung

down some inches below the navel, and was a source of great pain and derangement of health. The ointment was applied about once a month for a year, and on the patient leaving the hospital on private affairs, the swelling had been reduced to the size of a small cocoa-nut.

ART. XCIX.—*The Filaria papillosa, found in the Eye of Man and the Horse.*

By N. C. MACNAMARA,
Bengal Medical Service.

After some preliminary remarks, more especially with reference to the prevalence of *F. papillosa* in the eye of the horse in hot damp localities in Bengal, Mr. Macnamara proceeds with the narrative of the two following interesting cases. His own opinion is that the "embryo enters the circulation through means of the absorbents of the intestines, and is carried by the blood to the vessels of the iris; and being there deposited, it becomes developed, and when once matured, rapidly grows into the fully-formed worm.

"I am not aware that the *Filaria papillosa* has been described as an inhabitant of the human eye, but within the past seven years I have seen two such cases. The first occurred at a place called Colgong on the banks of the Ganges, some thirty miles below Bhaugulpore. I was encamped there throughout the rains, and towards the close of the season a grasscut of the name of Ramdanie came to my tent one morning, complaining of something, as he said, floating about in front of his eye; he could not help endeavouring to brush it away with his hand, though he knew very well the object was inside his eye; still, he suffered no pain, nor was there any indication of inflammation. The man stated that he had suffered in this way for two days, and that a line in front of his eye had appeared on his waking up one morning. He declares he went to bed without the slightest symptom of anything of the kind. He thinks the object may have got a little larger, but there has not been much perceptible difference in the size of the line since he first saw it; he remarked, 'the object is always moving about, but I cannot see it distinctly, and therefore cannot be certain about its size.' His great cause of complaint was the constant feeling of a moving object always in front of his eye night and day; with the eye closed or open, still the same sensation lasted. On examination, I distinctly saw a small worm swimming about in the aqueous humour, and I at once punctured the cornea and let out the parasite in the way before described: the man was at once relieved from all uneasiness, and in three days left the hospital, perfectly cured. The filaria when first taken out of Ramdanie's eye was alive; it was whitish, and marked with striæ, which could be seen when placed under the lens I had with me. This, however, was a small pocket instrument used for botanical purposes, and I could not make out the papilla on the neck of the

worm, though there certainly was a corrugated appearance of the integument; comparing this with specimens from the eye of the horse which I have since examined—first with the microscope above-mentioned, and then with one of Ross's quarter-inch glasses—I feel almost certain that this parasite was one of the *Filaria papillosa*, or else of some very similar species. I did not return to my station till six months after this case had been under my care, and by that time the specimen had grown hard and brown, and I could make nothing out of it.

"The second instance I saw of this kind occurred last May. A native came to my house with his left eye in a state of violent inflammation. He stated that twelve days before he had noticed, in rising in the morning, an object moving about in front of his eye, but which he soon discovered was inside the eyeball; it gave him from the first considerable pain, and he went off to the village doctor to get something to apply to the foot; however, he got no relief, and the pain in the eye became unendurable. On the morning before I saw him, on going to the dispensary the native doctor saw the end of a worm protruding from an ulcer in the cornea; he succeeded in drawing the parasite out of the eye, but in doing so, I am sorry to say, injured the head of the creature so much that I was again foiled in being able to determine the exact species of the filaria; like the one I had extracted, it was white, about as thick as a bit of thread, and half an inch long. The native doctor tells me he has seen several cases of this kind, but I can hardly credit this statement. I have only seen these two instances of the disease myself, and my sub-assistant-surgeon, Kany Lall Sen, tells me he has only met with one case, which occurred in the person of a Bengalee employed on the railroad near Patna; the patient did not remain under the care of Kany Lall Sen, and we have been unable to trace the subsequent history of this case.

"Dr. Woodemann, of Odessa, found two very small and delicate rings in the Morgagnian fluid of a person from whose eye he had extracted a cataract; these proved to be convoluted filariae, and subsequently he and Dr. Jugken discovered living filariae in the same situation: they were about five lines and a half long. It is evident, therefore, that other surgeons besides myself have met with filariae in the human eye, and they are well known to occur in the horse, dog, ox, sheep, and, lastly, in the eye of many fishes.

"The development and history of these parasites in the human eye is much like that of the Guinea-worm; they are both met with in certain localities in the tropics,—at times they appear almost like an epidemic disease, especially after heavy rain; they cause ulceration of the tissues in their neighbourhood, and thus make a passage for themselves into the world, and they are both known to have extraordinary powers of growth, and belong to the same family. Dr. Rankin, in the Madras Medical Reports for 1855, observes that an epidemic of Guinea-worm having occurred in the regiment under his charge, he proceeded to examine the water of the tanks and wells in the neighbourhood, but could find no indications of the parasite; but on one of the *F. medinensis* being placed in a bottle containing

some of the tank-water it became turbid, and was soon observed to be full of the ova of the Guinea-worm. If, therefore, one filaria can thus produce thousands of ova when placed under favourable circumstances, we can easily imagine that the *F. papillosa* will, in like manner, propagate its species, and thus find its way into the body of the horse, or any other animal that may drink the water thus incorporated.

"Some curious information will be found on this subject in several papers published in the first volume of the Proceedings of the Physical Society of Calcutta, by Drs. Twining and Breton. These gentlemen believed, and endeavoured to explain, the popular idea that worm in the eye and a peculiar form of paralysis of the hind legs in the horse are in some way dependent on one another. This error has originated in an existing notion prevalent among the natives of this country; and Dr. Twining supposes the pathology of the paralysis to be that the tissues about the lower end of the spine become infested with the filariæ, and they destroy the nervous matter of the lower extremity of the spinal cord, and thus the paralysis of the hind legs is produced. I simply mention this error in order to refute it. I have examined many horses who had 'gone in the loins,' and in none of them have I ever discovered any of the filariæ in or near the spinal cord; but, on the other hand, there has always been a sufficient lesion of the nervous matter in and about the lower end of the cord to account for the paralysis of the hind legs. An exactly analogous form of disease is to be met with in the human subject in this and other parts of India, as, for instance, in a tract of country situated between the rivers Gundunck and Bhagerutty in this district, where we meet numerous cases of poor creatures suffering from paraplegia. In these cases we find after death one of two conditions: 1st, fatty degenerations; or, 2ndly, an atrophied condition of the nerve-cells, particularly in the anterior horns. The former state is often the result of inflammation; the latter usually found in persons emaciated by disease, as by malarious fever. The pathological changes are the same in both man and horse, causing the same symptoms and a like termination. It has been argued, with much apparent truth, by Dr. Irving, of Allahabad, that this form of paraplegia is induced by the natives eating the kassarîe dall; it is evident, however, that this kind of dall does not affect animals in the same way. I have fed a pony and two goats for a long time upon kassarîe dall mixed with their food, and they evidently flourished on it. Moreover, thousands of the lower orders in Tirhoot live for a portion of the year on little else but the kassarîe dall, but few are affected with paraplegia, and those, according to my experience, in certain localities only. Goitre will be found to abound in the same situations in this part of the country; however, it is not my purpose at present to enter further upon a discussion of this subject, the matter was brought to my attention simply because of the very general belief in the popular error that paralysis of the hind legs in the horse or 'kumîre,' and worm in the eye, are in some way dependent upon the same cause."—*Ind. Annals Med. Sc.*, No. 16.

ART. C.—Case of Colonic Intussusception, with some Observations on Insufflation as a Remedy in Acute Obstructive Diseases of the Intestines.

By SURGEON-MAJOR BLACKLOCK,
Physician of the General Hospital, Madras.

In this case there were all the usual symptoms of intussusception, except any marks of blood by stool, after an opiate air was steadily blown in by the mouth of the operator through a stomach-pump tube. "The air at the very first puff met with great resistance, and even after blowing steadily and firmly for twenty minutes, only the left side of the abdomen was distended. By steady, firm blowing, however, for more than half an hour, the form of the abdomen gradually became symmetrical, from both sides being equally distended, and the efforts of the gut to expel the air became very strong and determined; the air however was retained about ten minutes longer, and then allowed to escape gradually. About half an hour after the cessation of the inflation, he got up to the close stool and passed about six ounces of clay-coloured, creamy, fæculent fluid, like thick chyle.

"When examined half an hour after the stool, when all distension from air had subsided, the hypochondriac tumour was found to have disappeared. He was now easy, with the exception of a considerable abdominal soreness. He was soothed by an opiate, and after a course of mercurial purgatives he perfectly recovered."

Dr. Blacklock gives an interesting sketch of the treatment of intussusception and of the practice of insufflation. The injected air finds a way where watery enemata cannot pass, and to give it a fair chance it ought to be brought to bear within a few hours at the utmost after the commencement of the signs of invagination, especially in cases of children. He had also found it very useful in several cases of inguinal hernia which could not be relieved by the taxis.—*Madras Quar. Journ. Med. Sc., April, 1863.*

ART. CI.—Three Cases of Poisoning by Stramonium, with Remarks.

By JOHN SHORTT, M.D.,
Madras Army.

These 3 cases were brought to the Civil Dispensary, Chingleput; in one instance for medical treatment, and in two others for confirmation as to the cause of death.

In Case No. 1, death seems to have taken place in three hours and a half, from the ingestion of about three ounces of the leaves.

In Case 2, the girl plucked a tender fruit from the plant, and ate one-third of the young seeds. On admission she had a wild appear-

ance, was stupid, and unconscious of her state; pupils widely dilated, skin warm and dry; pulse 65, slow and full. An emetic of sulphate of zinc failed to act, and the stomach-pump was then used; stimulants were afterwards given, and a dose of castor-oil on the following day completed the cure.

In Case No. 3, the girl was a corpse in four hours from eating the green fruit.

The *post-mortem* examinations in the two cases that proved fatal were nearly alike:—the countenances full and bloated, pupils widely dilated, the oozing of a frothy fluid from mouth and nostrils, the heart empty and flaccid, and the mucous membranes of the stomach highly, and that of the intestines slightly, congested.—*Madras Quar. Journ. Med. Sc.*, April, 1863.

ART. CII.—*Indian Substitutes for European Medicines.*

By GEORGE BIDIE, M.B.,

Madras Army.

In this second article on Indian substitutes for European medicines, Dr. Bidie passes in review a variety of substances in the classes diuretics, emetics, epispastics, expectorants, narcotics, sedatives, stimulants, tonics, ointments and cerates, plasters.

We would direct attention to the full information concerning *Mylabris cichorii*, the universal substitute in India for the *Cantharis vesicatoria*. The *Cannabis Indica* and its various preparations. The *Oleum Jecoris Piscis*, or fish-liver oil, for years used in Indian hospitals as a substitute for cod-liver oil. The *Ptychotis Ajowan*, or Womum, the seeds of which are stomachic, cardiac, and stimulant. Womum-water, prepared by distillation, is in India a favourite and useful domestic remedy in colic, diarrhœa, etc. The seeds yield a very fluid volatile oil, which is a powerful aromatic stimulant, and in many cases a far superior remedy to either dill or anise.

Mr. J. Wood, assistant to the Professor of Botany, communicates a note on the virtues of the womum-water, from which the following is an extract:—

“In some forms of dyspepsia, in the vomiting, griping, or diarrhœa from errors in diet, in simple flatulence, and even tympanites, in faintness and exhaustion, in choleraic diarrhœa, in certain cases of colic and hysteria, it has been found, even when given *alone*, pre-eminently useful.

“From all that is known of this medicine, it appears to combine the stimulant quality of capsicum or mustard, the bitter property of kreaeta, and the anti-spasmodic virtues of assafœtida.”—*Madras Quar. Journ. Med. Sc.*, No. 10.

ART. CIII.—*On the Nature, Pathology, and Treatment of Tetanus, considered especially with Reference to the Necessity of the Employment of Antiphlogistics, locally and generally.*

By THOMAS LOWE,

Medical Officer, Sappers and Miners.

The object of this elaborate paper is to advocate an antiphlogistic mode of treatment in preference to that by narcotics, which is more usually adopted. Mr. Lowe gives an analysis of 8 cases, on which he observes:—

“From the cases brought forward, and from what I shall presently observe, I believe it will be seen that it is better to depend upon local antiphlogistics—leeches, cupping, blisters, and cold affusions, ice or cold evaporating lotions applied to the occiput and first portions of the spine—aided by brisk purgation and purgative enemata, than to rely upon aconite, belladonna, and other dangerous medicines, the effects of which, in this disease, are at least doubtful, if not decidedly injurious.”

Mr. Lowe states that a diminution of the spasms is *always* witnessed after the bowels are freely moved. An enema of salts, aloes, turpentine, and gruel should be administered at once, if the bowels be constipated and the symptoms severe, and repeated each morning. This generally gives great and speedy relief, and if worms be present, these will be expelled.

Mr. Lowe makes an important practical observation that, “although acute traumatic tetanus so frequently terminates fatally, yet when it becomes *chronic*, hopes of recovery may be entertained, especially when the spasms assume an intermittent character, as they sometimes do.” It is doubtless in such cases where quinine and wine prove of much advantage.

Bearing on this point, it is remarked that “within the last twelve months many cases of jungle fever, contracted in the ‘Upper Godavery District,’ have been attended with severe epileptiform convulsions.

“It would be well perhaps to bear in mind the close relationship of *epilepsy*, *hysteria*, and *tetanus*, and also the fact that severe epilepsy and hysteria, as well as tetanus,* have been often noticed as results of miasmatic poisoning, as well as originating in causes of an *eccentric* kind.”

The following are Mr. Lowe's concluding observations:—

“Notwithstanding that I believe the application of ice, the affusion of cold water and cold lotions to the occiput and spine to be of the greatest benefit in this disease, I would recommend *cold*, in whatever form it can be applied, only to be used as *one* of the great

* ‘Lancet,’ Sept. 27, 1862, p. 331, “Intermittent Tetanus during Pregnancy,” by T. Morris, M.D.

antiphlogistics at our command ; not solely, to the neglect of leeching, blistering, and free purgation.

"In every case we must support the patient by enemata of beef-tea and port wine, sago and arrowroot, as the disease is one which induces rapid wasting and exhaustion. A full dose of laudanum may be given at bed-time, with manifest advantage, to induce sleep, *after* the bowels have been freely acted on by purgation, and the spinal irritation and congestion have been moderated or removed by the means recommended. When the disease becomes chronic, removal to another climate, with iodide of potassium, quinine, wine, and *cold affusions* daily to the head and neck, every morning and *evening*, should be advised.

"No plan of treatment can ever be *universally* successful in any disease, much less in one which, in its attack, involves those parts of the nervous system upon which *life alone depends* ; but I do believe greater success will crown our efforts in the treatment of tetanus if we follow the antiphlogistic method, to *the total disregard of narcotics*, than any *new* plans that have been of late years recommended.

"I have been induced to bring this subject forward in its present form, not with any desire to criticize the cases recorded by brother medical officers, but solely as a labourer in the fields of science endeavouring to find out for myself, and for the benefit of suffering humanity, a reason for the comparative excessive mortality from this disease, and to humbly endeavour to point out, if possible, a means of obviating it.

"Whether I have performed the task I set myself or not will be proved, I trust, by fellow-workers more capable than myself, and who have greater opportunities of testing the value of the facts brought forward by their extensive clinical observation ; and that other medical officers will do so is my most earnest hope."—*Madras Quar. Journ. Med. Sc.*, Jan., 1863.

ART. CIV.—*Considerations as to the Possibility of Preventing the Occurrence of Traumatic Tetanus.*

By J. J. Wood,

Assist. Apothecary, Madras Army.

The considerations suggested in this paper are as follows :—

"All that has been said before, regarding the treatment of 'wounded,' with a view to the prevention of tetanus, may be briefly summed up here :—

"1. The avoidance of evaporating lotions, and even of ordinary cold water, to the injured part.

"2. The local use of tepid anodyne or sedative medicaments, from the period of admission to that of cicatrization, as a *general rule*.

"3. The internal administration of sedatives for the first few days, or as long as pain was complained of, in the slighter cases; but *continued* till the wound had *completely cicatrized* in severe or suspicious ones.

"4. The combination of stimulants with the sedative *immediately* on admission, if necessary.

"5. Depressants, etc., with the sedative, in the robust European, in order to keep inflammatory action within bounds.

"6. Attention to the general health, by removing all sources of irritation, and building up the strength with tonics and nutritious diet.

"7. Attention to the habits of the patient.

"8. (It may be here added) the keeping the surface of the body comfortably warm by appropriate clothing.

"And finally, recollecting that the longest period between the receipt of the injury and the accession of tetanic symptoms is but a short one *comparatively* (and particularly when the patient's general health is very much out of order), we should lose no time,—we should do that which we intend doing as expeditiously as possible, or rather, as quickly as is compatible with safety.

"It is not, of course, presumed that by following out some such prophylactic plan as the foregoing we would succeed in warding off tetanus in every instance, recollecting that this affection comes on occasionally *very soon after* an injury, where there would be little or no time for action; but I somehow feel certain that it would, in the majority of cases at least, tend very materially to diminish the chances of attack.

"And if, in spite of our prophylactic measures, our well-meant attentions, some patient should after all become the subject of tetanus, it is not difficult to understand how he would be better able to 'weather out the storm,' from having everything, as the sailors say, 'hauled taut.'"

"It may be urged that as every injury is not followed by tetanus, would it not be superfluous to anticipate that disease always by prophylactic treatment? That must be left entirely to the judgment of the practitioner. He is aware that tetanus, though it may succeed *any form of injury*, occurring in *any part of the body*, yet *oftener supervenes on some particular forms*, such as *lacerated, punctured, and gunshot wounds*, more especially when these have been inflicted on *parts of the body which are very tendinous, or abundantly supplied with nerves*, such as the *hands and feet*; and he knows, further, that the rice-eating Hindoo is more liable to it than the better-fed Mahomedan, and the latter than the European.* In fact,

* "I have been informed by Mr. Assistant-Apothecary P. Kinsley, who was for about five years at the Chinese Pauper and Police Hospitals at Singapore, that he never saw a case of tetanus in a Chinaman, though the number admitted there, with all kinds of wounds and injuries, is very great at all times. Is this due to their living largely on animal food, or to the in-

knowing, from both reading and experience, the cases in which it was most likely to occur, he would do well, as the responsibility lies on his own shoulders, to remember the old saying, that 'the safest way is the best.'—*Madras Quar. Journ. Med. Science, January, 1863.*

ART. CV.—*Remarks on some Cases of Traumatic Tetanus.*

By JOHN SHORTT, M.D.,

Madras Army.

A native, 55 years of age, was thrown from a cart, and received a wound on the left side of his forehead. On the tenth day from receipt of the injury he began to suffer from pain, and stiffness of the muscles of the face and neck. Dr. Shortt saw him on the fourteenth day, and after a purge, prescribed tincture of cannabis in half-drachm doses every two hours. The treatment of the case extended from the 14th February till the 15th March, when the patient was discharged well. The following remarks are appended to the detailed case:—

"This case is of considerable interest, from the fact of the tinct. cannabis having been administered uncombined, thus testing the full value of the drug. The only auxiliaries required were aperients, to keep the bowels in order, as there is always a tendency to costiveness in this disease. It is necessary here to state that for nearly forty hours after the patient's admission he took no other medicine than the calomel and colocynth pill, and purgative powder. Some of the patient's friends objected to his being treated at the Civil Dispensary, and were anxious to have him removed to his own house; on this plea they refused to give him other medicines than those alluded to, and intended to have him removed on the morning of the 15th instant; but finding the patient worse, they reluctantly consented to leave him where he was. The cannabis treatment was immediately commenced. Trismus had fully set in, so much so that the mouth could not be opened at all. Stiffness and spasms of the muscles of the back of the neck were present; and the peculiar features of the disease so well marked in tetanus, giving to the countenance that expressive smile, and distortion, were also seen. Nevertheless, there were two important symptoms wanting when the treatment was commenced. These were, difficulty in swallowing, and the violent pain often referred to the sternum, which may be considered pathognomonic of the disease. In all probability they would have followed had the treatment been delayed a few hours longer. The tinct. cannabis was administered in 3 ss. doses every two hours, in an ounce of camphor mixture. . . .

"The largest quantity of the tinct. cannabis administered within

dulgence of being permitted to *continue their practice* of opium smoking in hospital?"

twenty-four hours was 3iiss. This quantity was taken continually for six days. The object kept in view was, not only to bring the patient under the influence of the medicine, but to maintain the same until the nervous irritation which excited the disease had subsided. The wound healed kindly, on the 9th day, with cold-water dressings, and the symptoms of tetanic spasm were alleviated. The patient recovered the use of the upper lid of the right eye, which had been palsied, and was doing well in every other way when the dose of the tinctura cannabis was reduced to ℥ xv. Immediately after, general spasms and startings of the muscles (of the left side in particular) began to show themselves.

"The trismus re-appeared, the patient lost his cheerful look, and there was every indication of opisthotonos setting in.

"This shows that although the cannabis had controlled the disease for the time being, the medicine required to be continued for a much longer period to eradicate the tendency to this disease from the system. This was completely effected on the twenty-seventh day from the commencement of the treatment. During the whole of this time the patient continued more or less under the influence of the drug.

"The specific effect of the cannabis was pretty well marked in this case, for on the evening of the second day after the commencement of the medicine, it was evidenced by the fulness of the pulse. Although there was no visible excitement or intoxication, the patient continued semi-cataleptic, his countenance cheerful and happy, appetite unimpaired, and he was all day in a dreamy state, with closed eyes; but at nights he became wakeful and restless, there not being the least tendency to sleep. On the fifteenth day, an opiate consisting of ℥ xxx. of tinct. opii was administered at bed-time, with the happiest effect. The patient at once acknowledged its good effect, as it was the first night's refreshing sleep he had since his illness. It would be an advantage to administer an opiate at bed-time in the treatment of the disease with cannabis; but this should not be done ere the system has been brought under the influence of the drug, or so as to check the tendency to wakefulness. In the present state of our knowledge, the cannabis appears to be the best and most appropriate remedy to have recourse to in this disease."—*Madras Quar. Journ. Med. Science*, No. 10.

ART. CVI.—*Tetanus treated by Opium Inhalation.*

"A powerful native, about 40 years of age, sustained a compound comminuted fracture of the great toe, the wheel of a native cart having gone over it. The injured toe was amputated, and the fragments of bone carefully removed. Shortly afterwards tetanus of a severe nature set in, the attack being at first confined to the injured side, but afterwards implicating both. All the ordinary remedies failed, and the patient became exhausted. He was then placed under chloroform, the wound opened afresh, and a small spicula

found and removed. On the patient recovering from the anæsthesia, he was induced to smoke opium, in which he had never indulged. After a little the usual effect was produced; he became under the influence of the narcotic and remained unconscious for a time, as opium smokers do; on partial restoration of consciousness the attacks returned; again the fumes of opium were administered, and so on during a period of about twenty days. The interesting part of the whole is, that the violence of the paroxysms gradually decreased until they ceased to recur; the peculiar tension of the muscles of the face, jaws, and neck, however, continued even for some time longer; and so great had become the attachment of the man to the opium pipe, that considerable difficulty and resolution were needed before he was able to break himself of the habit."—*'China from a Medical Point of View,' by Dr. Gordon, C.B., Deputy Inspector-General.*

ART. CVII.—*Memorandum on Re-vaccination in the
44th Madras Native Infantry.*

By G. MACKAY, M.D.,
Madras Army.

Dr. Mackay states that, judging from the frequency with which he has found re-vaccination to succeed, both among children and adults, he is inclined to adopt the opinion that a child once successfully vaccinated is protected only for a limited period, and not for life. He gives two Tables, showing the results of re-vaccination in the 44th Native Infantry, and adds the following comments:—

"It will be seen in the foregoing Tables that among 607 sepoys, the large number of 551, or at the rate of 907 per 1000, showed marks of having suffered from smallpox, only 122 of these showed good marks of previous vaccination; as sepoys are regularly vaccinated, it must be presumed that the majority of those who showed marks of smallpox suffered from the disease in infancy, or at least previous to being enlisted, and that it was not considered necessary subsequently to vaccinate them. I have observed a similar prevalence of smallpox marks among the native prisoners in a large jail in this country, and some idea may be formed from these figures of what the fearful ravages of this disease must be among the native population in general.

"Table II. shows, that among those who presented good marks of previous vaccination, a perfect vaccine pustule was produced by re-vaccination in the proportion of 296·15 per 1000. It must not be supposed that if these individuals had been exposed to the contagion of smallpox, they would have contracted the disease in the same proportion, for among those who bore marks of previous smallpox re-vaccination was even more successful; yet we know that persons who have once had this disease are little liable to a second attack; but there can be no doubt that those in whom re-vaccination suc-

ceeded would have been more liable to suffer if exposed to the contagion than the others.

"Inoculation of lymph (vaccine or variolous) is, as Mr. Simon states, a more delicate test of susceptibility to smallpox than breathing an infected atmosphere; many persons when lymph is inserted in their skin will show, locally at least, evidences of its effects, though they would not have suffered from breathing an infected atmosphere.

"56 of the men included in the above Tables stated that they had been vaccinated at their native villages, and showed a cicatrix on one or both forearms, circular or oval shaped, about a quarter of an inch in diameter; these were larger in size, but resembled the dark-coloured marks frequently seen on natives as the result of smallpox. 2 of these men showed good marks, and 1 doubtful marks of previous ordinary vaccination. (The others were entered as not having been vaccinated.) 43 of them showed marks of having suffered from smallpox, and 1 had marks of smallpox and ordinary vaccination. 9 presented no other marks than those of the native operation; of these, 4 were vaccinated with perfect success, and in 2 the result was a modified vaccine pustule. The native operation does not seem to have afforded much protection, only 13 out of the 56 cases having escaped smallpox, and 2 of the 13 showed marks of having been vaccinated in the ordinary way.

"The numbers in the foregoing Tables are too few to justify any important practical conclusions being drawn from them, but they are offered as a small contribution to the statistics of this important subject, and in the hopes of attracting attention to it. A regular system of re-vaccination throughout the native army, with a record of the dates on which it is performed on each individual, would in time lead to important results, and afford data for deciding the question as to how long the beneficial effect of the operation lasts."—*Madras Quar. Journ. Med. Sc.*, Jan. 7, 1863.

ART. CVIII.—*Clinical Observations in Surgery.*

By J. FAYRE, M.D.,

Prof. of Surg., and Surgeon Med. College Hosp., Calcutta.

These valuable clinical observations are continued from No. 15 of the Indian Annals of Medical Science, and comprise, in addition to the extract which follows, remarks on *Fracture of the Thigh Bone; Fracture of the Leg treated by Application of Plaster-of-Paris Splints; Rapid Union of Fractures; Fungus of the Testicle; The Ecraseur; Injury of the Spine; Neuroma; Radical Cure of Hernia; Aneurism of the Lingual Artery; Amputation at the Shoulder Joint; Strangulated Hernia; Medullary Disease of an Undescended Testicle removed; Tetanus caused by a Wound of the Hand treated by section of the Median Nerve.*

Elephantiasis Genitalis.

"The accompanying tabular statement* of cases of hypertrophy of the coverings of the genital organs is interesting. It shows the peculiar liability of the inhabitants of Bengal to the disease, and also how very amenable it is to surgical treatment.

"It appears also to prove that the Hindoo is more liable than the Mahomedan to be affected.

"The operation for removal of a scrotal tumour is formidable, and in very large outgrowths it is attended with danger of sinking from hæmorrhage or exhaustion, either on the table or soon after the operation. The risk of fatal hæmorrhage is chiefly incurred in those large tumours where delay is caused by efforts being made to save the genital organs. This, in some cases, it is tedious and difficult to effect, owing to the depth at which they are embedded, or to the close adhesion of the testes and cords, especially where there is no hydrocele, to the surrounding tissues.

"It therefore may become a question whether it is not better to sweep away the entire growth, after exposing the penis, and thus, at the sacrifice of the testes, avoid the risk of fatal hæmorrhage.

"In none of the cases here recorded did it prove necessary to have resource to this extreme measure. But in some of the larger tumours it was evident that, in preserving the genital organs, the powers of endurance were taxed to the utmost.

"The mode of performing the operation is the following:—A director is introduced into the sinus leading to the penis, and a longitudinal incision made on it down to the glans by a few strokes of the scalpel, or it is laid open at once, by introducing a catlin on the director and cutting outwards. This wound is separated, and the penis is dissected out, reflected, and held back on the abdomen. Incisions are then made down to the testes, which are also dissected out and reflected in a similar manner. Hydroceles, if present, are opened, and the tunicae vaginales, if thickened, as they often are, cut away. The penis and testes being then carefully held out of the way, the tumour is separated from its attachments by a few decided strokes with a scalpel or with an amputating knife: keeping close to the perineum, and carefully removing all the diseased integument.

"The bleeding vessels must next be secured without loss of time; some of the larger arterial branches and venous sinuses are already under control of the assistant's fingers.

"From ten to twenty, fifty or sixty ligatures may be required, and

* ABSTRACT OF OPERATIONS FROM JULY, 1859, TILL MAY, 1862.

	No.	Deaths.	Pyæmia.	Shock.	Total.
Mahomedans	4	0	0	0	0
Hindoos	24	6	5	1	6
	28	6	5	1	6

the greatest care should be taken to secure every bleeding point, arterial or venous, by ligature, or troublesome hæmorrhage will occur when reaction sets in, and the patient becomes warm in bed. I have found no ill result from tying veins in this operation, and all bleeding points are accordingly ligatured; the possible chance of phlebitis being as nothing compared with the present risk of hæmorrhage. It is to be observed that the danger I speak of does not refer to profuse bleeding from one or two large vessels, so much as to the continuous oozing from numerous small ones, divided at the same time.

"To diminish the loss of blood as much as possible, the tumour should be elevated, and drained, as it were, for an hour or so before the operation. I have recently used an iron clamp to compress the neck of the tumour, and with it can materially control arterial hæmorrhage, though it appears rather to interfere with the rapidity of the operation. The wound closes by granulation; the process of cicatrization generally covers the testes within six weeks to two months from the date of the operation; but this depends to a great extent on their size, the thickness and length of the cords, and the quantity of sound integument left.

"The condition of the patient after recovery is one of vast improvement on that before the operation; it is remarkable how little deformity is produced; the skin is drawn over the testes by granulation and cicatrization; and the penis becomes invested by a new integument of pliant cicatrix tissue, which has a tendency to approach more and more in structure and appearance to the natural skin the older it grows. In some cases a covering can be obtained for the penis by preserving a portion of the reflected prepuce, which not unfrequently remains unaffected in the midst of so much diseased structure. The advantage of doing so is, however, questionable, as it is liable to become oedematous and thickened subsequently.

"In every case where I have had opportunity of making inquiry some time after the operation, it has appeared that the functions of the organs were perfectly restored.

"As to the pathology of these outgrowths; they are the local expressions of a constitutional disorder, elephantiasis, and are simply exaggerations of the natural structures. White and yellow fibre, unstriped muscle of the dartos, skin, and areolar tissue; the whole infiltrated with a quantity of jelly-like albumino-serous fluid. They are concurrent in their growth, with repeated paroxysms of periodical fever recurring in some cases once, in others, twice a month, and attributed by the natives to lunar, as well as telluric and atmospheric influences. During these attacks of fever the tumour is always described as increasing in size, becoming hot, turgid, painful, sometimes fissured and exuding a sanious fluid. With the cessation of fever, there is cessation in growth by paroxysms, but each attack leaves the tumour somewhat larger than it found it. The fever having entirely disappeared, the tumour either ceases to grow at all, or it increases slowly and insidiously.

"The scrotal tumour is occasionally accompanied by elephantiasis

in other parts of the body, or of the limbs. But in the majority of cases that have come under my observation it has been confined to the genital organs."

From the abstract of the cases which is given, we observe that the tumours varied in weight from 5 lbs. to 75½.—*Indian Annals Med. Sc.*, No. 16.

ART. CIX.—*On the Operation for Elephantiasis Scroti, with Cases and Remarks.*

By ASSISTANT-SURGEON G. R. BALLINGALL, M.D.,
Professor of Surgery, Bombay.

In this paper Dr. Ballingall records his further experience in the removal of ten tumours of the scrotum successfully. In one of these the mass weighed 106½ lbs. In a total of 24 cases there were only 2 deaths.

The disease is erroneously attributed by the natives to eating fish, for some of the patients were Bunias, who never use this article of food.

In a note to this paper, Dr. H. V. Carter gives the result of the microscopic examination of the large tumour.—*Trans. Med. and Phys. Soc. Bombay*, No. 8, *New Series*.

ART. CX.—*Remarks on the Operative Cure of Elephantiasis Scroti, illustrated by recent Cases in the Madras Hospitals.*

By HOWARD B. MONTGOMERY, M.D., F.R.C.S.I.

Six cases are given in full detail, all of which may be said to have been successful, for the only casualty arose from cholera, with which the patient was attacked after the operation.

Dr. Montgomery concludes his observations with the following axioms, which, he says, would guide him in future operations, on the treatment of cases of scrotal herpes:—

"1st. That herpetic eruption of the scrotum is often the precursor of elephantiasis, and that it should therefore be checked as soon as possible. This may be done by such means as are usual in this affection, or by the leaf-juice of *Curica Papaya*.

"2nd. That the condition of the heart should not be overlooked, and that the administration of chloroform should either be avoided, or used with extreme care.

"3rd. That the size of the tumour should not deter from operation.

"4th. That it is at all times better to remove too much than too little skin; that no diseased skin should be left behind; and, that

complete denudation of the genitals is, in its after treatment, less likely to be complicated by sloughing.

"5th. That (as shown in these cases, though not recorded in all of them) the generative powers are restored after operation.

"The time occupied, in the cases where I have specified it, was as follows:—No. I. (from date of operation to discharge from hospital) 49 days. No. II. 66 days. No. III. died of cholera on the 42nd day after operation. No. V. 58 days, and No. VI. 90 days.

"I find that Dr. Fayrer has found a longer time of treatment occasionally necessary. Thus he mentions (*op. cit.*) 139, 71, 102, 53, 38, 47 and 106 days were required to complete cure in seven cases, and 114 days left two patients still under treatment.

"The causes of death, from the operation, in Dr. Fayrer's cases were 4—3 from pyæmia and 1 from shock. It is a question whether or not chloroform may have been the active destroyer here.

"The summary of the cases in Madras shows the favourable results of 5 cured and 1 died from cholera, when all immediate danger from the operation was over.

"Intentionally I have not dwelt upon the minor details of the operation, which is neither difficult nor necessarily very long, because I could add nothing to the many records already existing on the subject."—*Madras Quar. Journ. Med. Sc., April 1863.*

ART. CXI.—*Extraction of Cataract in India.*

Dr. Archer, in his Report of the Calcutta Ophthalmic Hospital, May, 1863, draws attention to the results of the operations of cataract by extraction, as being very interesting, owing to the doubts long entertained of the expediency of performing this particular operation on the natives of India, in consequence of their debility of constitution.

Number of patients operated on during the year, 76; of	
these 9 were operations of both eyes, making the	
total	85
Unsuccessful	14

Most of the failures were in November, December, and January, the cause being the extreme depression of the system, and want of proper capillary action, produced by cold. Excluding these months, the unsuccessful operations are only six.

The recoveries were very rapid, some having attended as out-patients four days after the operation; the eye, however, being closed for a considerable time afterwards.

The patients were kept on full diet, and cod-liver oil given both before and after the operation, in debilitated subjects. Milk and sugar were allowed in abundance, and the eyelids were brought together by a silver suture in the manner introduced by Dr. Macnamara.

ART. CXI.—*Notes of a few Cases that occurred in the
Tellicherry Dispensary.*

By M. C. FURNELL,
Madras Army.

From these notes, we present a few examples of severe injury, followed by recovery without a bad symptom. Among the natives of India such instances of remarkable immunity from constitutional disturbance are very common.

*Wound of Abdomen; Protrusion and Perforation of Intestines;
Recovery.*

"Raman, a tier, æt. 22, was admitted December 14th. The history was, that on the previous day (13th) he was, in the morning, gored by a bull; that at first there was little, if any, protrusion of intestines; but, from being carried a long distance, first to the police thannah, and then to Tellicherry, several miles from where the accident occurred, the protrusion gradually took place. When seen by me there was a lapfull of intestines, covered with a thin cloth adherent to them, and the whole was dry and begrimed with dirt. The man was pale and depressed, had slight hiccough, and a fluttering pulse.

"Having administered some wine, I removed the cloth, and washed the intestines with warm water and a soft sponge, and proceeded to return them. After a few coils had been introduced, there suddenly took place a squirt of bloody, grumous fecal matter from the piece of intestine in my hand, the first intimation I had of its being perforated; the hole was easily found, large enough to admit the end of an unmade quill. I proceeded to pass a ligature round this by pinching up the gut in my forceps; the attempt made matters worse; so soft and congested had become the coats of the intestines, they tore and broke down under the forceps. It was determined then to try and sew the hole up with a fine needle and thread, and a messenger was sent to obtain the needle. Whilst he was gone I continued to return the coil, and found, to my astonishment, that, although firm pressure was needed to push the intestine through the small aperture of exit, no more fecal matter exuded; the hole seemed effectually plugged by the mucous membrane from inside. Under these circumstances the intestines were returned as they were, without any suture, and the external wound of the abdominal parietes closed."

The patient was kept constantly under the influence of opium, and had a little port-wine occasionally; the only food allowed was a little rice-water and cocoa-nut milk: the urine was drawn off by a catheter. On the 17th, the report is:—

"Slept well; looks comfortable; passed a quantity of urine after my departure last night. Skin warm and moist; pulse 76; tongue becoming moist, and losing its red streak.

"Dressed the wound and took out the stitches; about half an ounce of thick laudable pus exuded.

"From this time the man progressed without a bad symptom. On the 26th, twelve days from admission, the bowels not having been moved, he was ordered a warm-water enema, which brought away a quantity of very offensive fæces. After this the bowels acted regularly, and he was discharged on January 24th quite recovered.

"Wound of Axilla.

"Conjee Cootty, a tier, æt. 50, was admitted with a frightful wound in the axilla. Whilst thatching, he slipped off the roof of a house and fell on a bamboo stake, which, entering the axilla, passed out above the clavicle just exterior to the sternal attachment of the sterno-mastoid muscle, and there snapped off, leaving a piece of wood some inches in length in the wound. How the axillary and sub-clavian vessels escaped is a puzzle. They did, however. The stake being extracted, little or no hæmorrhage ensued; and after a most tedious attendance of some three months, caused by the tissues around the wound having extensively sloughed, he was discharged cured. Strange to say, despite the serious nature of his wound, the man had not the slightest constitutional disturbance from the day of admittance to his discharge. This exemption on the part of the native is often noticed, and is usually ascribed to his sobriety. It scarcely holds good, however, of the tier toddy-drawer, who is anything but a 'teetotaller.' I think the cause of immunity must rather be looked for in their simple vegetable diet.

"Extensive Wound of the Chest; Recovery.

"Aumunder, æt. 14, nair, was brought into the dispensary, March 28th, with a very curious wound. He had been watching in the fields in one of those slight, elevated erections, so often seen in this country, when a wind-storm came on and blew down his lodgment. He fell on a large blunt-ended bamboo, which entered his chest a little to the left of the sternum, between it and the nipple, staking him.

"The wound, when first seen by me, was a large jagged opening, communicating with the cavity of the chest. The sixth, seventh, and eighth ribs were torn away from their connections to the sternum, and one could easily pass one's finger into the mediastinum, and feel the heart beat against it. Such an examination, however, was made but once, to ascertain the nature of the wound, and search for any foreign body which might have remained; all meddlesome probing was carefully avoided; the wound was brought together as best it could be, and a large binder passed round the chest.

"March 31.—Doing well; wound dressed.

"April 7th.—Not seen the boy since last entry, being absent from the station. I find him, on return, much improved. External wound healing; the discharge of pus is made to drain away by turning the patient on his face.

"15th.—Wound much improved; some fever. To have quinine *ter die*.

"20th.—Convalescent."—*Madras Quar. Journ. Med. Sci.*, July, 1863.

ART. CXII.—*Notes upon certain Surgical Appliances, and upon some minor Points in Surgery.*

By W. N. CHIPPERFIELD,
Prof. Anat. and Phys. Madras Med. College.

Radical Cure of Reducible Hernia.

After a very fair and careful review of the several operations which have been, from an early period, proposed for the cure of rupture, Mr. Chipperfield objects to the term *radical cure* as applied to any one of these; for, although some of them may effectually perform the immediate occlusion of the ring and part of the canal, he questions whether this can be looked upon as a radical cure of the generality of hernia. That very small and recent hernia in young subjects may be cured by such means there can be no doubt; and the same may be said of the constant application, for a certain period of time, of a well-fitting and suitable truss. The following extract presents us with Mr. Chipperfield's matured views on the subject, as the result of his observations among Europeans and natives who have undergone the operation:—

"It is always a good plan, when a surgeon is required to operate, for him to look at the matter as much as possible from a personal point of view, and to carry out exactly such a proceeding as he would desire to have put in practice upon himself, were he the sufferer. In this light I have devoted a considerable amount of attention to the radical cure of hernia; and were I the subject of such an affection, I would most unhesitatingly submit to one of the more recently introduced operations,—either Wutzer's, with Davies's improved instrument, Syme's, Wood's, or Chisholm's. But so soon as all inflammatory symptoms had subsided, and what is commonly called *the cure* had resulted, I would exercise such ingenuity as I could bring to bear upon the manufacture of a comfortable, beautifully-fitting truss, the ceinture of which should be composed partly of elastic webbing, and partly of some non-resistant material, which should enclose a short, fine, elastic steel band, and the pad of which should be weak-sprunged; but should nevertheless accurately support the internal ring, without unduly pressing upon the material recently introduced into the inguinal canal. This truss should form an item of my daily habiliments, only to be taken off when I assumed the recumbent posture."

Wounds of the Abdomen in Natives of India.

Mr. Chipperfield had treated about 20 of these cases of severe character, there being protrusion of the intestines, with a punctured and more or less lacerated wound, caused by the sharp horn of the buffalo. On admission, the patients were more or less exhausted, and there-

fore some hot soup or a glass of wine, or other stimulant, was given. The next step was to remove the cloth in which the intestines were invariably enveloped: this was facilitated by a plentiful effusion of tepid water; all foreign matters were removed, and the intestines carefully washed, and, if uninjured, returned. When the wound was so small as to present a kind of stricture, it was enlarged, and the reduction being effected, it was closed by points of interrupted suture. In some instances the intestine was lacerated, torn longitudinally. The glover's stitch was used to close the wound, employed so that the knot on the thread lay within the cavity of the bowel, and the serous surfaces placed in actual contact, in order that lymph might be effused over the suture. In only two instances did any symptoms of peritonitis appear. The treatment of this complication was very simple,—opium, one grain, every two or three hours, and turpentine stupes externally.

Mr. Chipperfield was surprised at the rapid progress towards recovery which all these cases made. Only one terminated fatally, and it was hopeless from the beginning, owing to extensive injury of the bowel and mesentery, and loss of blood.

In most of the cases it was seldom necessary to administer any medicine: rest, quietude, and careful diet sufficed. It was an object to keep the bowels quiet for two or three days, and, when requisite, to solicit their action; this was effected by a little castor-oil, followed by a simple enema.

Mr. Chipperfield concludes that these injuries are of a much less formidable and fatal character when happening among natives of India than amongst Europeans. This accords with the experience of other surgeons in India.—*Madras Quar. Journ. Med. Sci.*, No. 10.

ART. CXIII.—*On some anomalous Results of the Administration of Chloroform by Inhalation.*

By H. B. MONTGOMERY, M.D., F.R.C.S.I.,
Madras Army.

Dr. Montgomery's experience is highly in favour of the almost universal use of chloroform inhalation in all serious operations; but he frankly confesses that he never administers it without being on the watch for dangerous symptoms. He gives details of 4 cases, which seem to prove the following points:—

- "1. That loss of consciousness is not essential to loss of sensation.
 - "2. That apparent recovery, at the time, does not prevent the possibility of cerebral disturbance having been set up.
 - "3. That the drug may be continued without ill effects for a long time, and yet *suddenly* induce dangerous symptoms.
 - "4. That in certain diseases, chloroform must be administered with especial care, even though the heart may appear to be sound."
- Madras Quar. Journ. Med. Sci.*, No. 10.

ART. CXIV.—*On Mycetoma.*

By H. V. CARTER, M.D. Lond.,
Assistant-Surgeon, Bombay Army.

"In the following remarks it is proposed to give some account of a very serious disease widely prevailing in India, and in its nature and pathological characters well worthy the attention of the surgeon and naturalist. 'Mycetoma' stands for a form of swelling which is caused by the growth of a fungus. The term is sufficiently expressive, and briefer than, if not otherwise preferable to, that of 'Fungus Disease,' under which I first described the affection. Since those observations were made (March, 1860) many facts have come to light which almost complete the natural history of mycetoma, so that it may not be premature to offer the following as at least a basis for subsequent research.

"A condensed description of the pathological characters of the disease, and a short account of its natural history, will be presented in succession; the facts upon which both are founded being entirely derived from personal observation.

"The feet and hands are the only parts attacked; but this feature of the affection, as also its local or endemic character (which must still be called Indian), may require to be modified in the course of time and after more extended observation. Patients present themselves with a foot or hand (generally the former) much swollen, of a dark colour, and studded with numerous sinuses; the form of the swelling is more or less globular, and as to its extent, the whole of the member, or one side or part only, may be implicated. In the former case the projecting fingers appear to be imbedded, being themselves generally free, and the sole or palm is flat, or even convex. Seldom does the disease extend much beyond the ankle or wrist, and its whole appearance, at first sight, somewhat resembles a long-standing scrofulous affection. The sinuses are considerable in number, and often clustered together about the sole, ankles, or dorsum of the foot; some are simple openings, others are raised upon soft elevations or present a pouting edge. The appearance of the more recent, especially in preserved specimens, is characteristic, being circular in form, from one-third to one-half inch in diameter, and gradually deepening towards the central aperture, from the removal of successive layers of cuticle; white patches are frequently seen around. The size to which the swelling may attain varies; in advanced cases its circumference may be eighteen inches, or upwards, and the form is then hugely misshapen.

"Any one who is acquainted with the fungus-disease could not mistake it, when tolerably advanced, for ordinary caries; the size of the foot, its globular form, and the number and appearance of the sinuses, being the chief diagnostic characters; to which may be added, the absence of a corresponding degree of constitutional disturbance, pain or hectic fever, and the patient is generally of a scrofulous or syphilitic taint. But there is one test which is applicable in almost all cases, and that is the character of the discharge. Sometimes the

fungus-particles are so abundant as to block up the apertures of the sinuses, or float away in numbers in the thin serous or sero-purulent fluid, and when less numerous they may generally be detected with the aid of a lens. In the black variety a single glance will be sufficient, and in the pale and soft (which have been well compared to mustard or poppy seeds) their appearance is hardly less characteristic. The presence of these particles in the discharge from the sinuses is an infallible test of the nature of the disease, and by the use of the microscope I was very early enabled to make a correct diagnosis in a rather obscure case; but generally this aid is not required. The external appearances of mycetoma appear to be the same, whatever the form of fungus-growth. The sinuses are the terminations of canals, more or less lengthy and tortuous, which occasionally lead to bone; but the latter will not usually yield to pressure of the probe, for it is not really in a carious condition, although partly absorbed."

After describing the appearances presented by a section of a foot thus affected, Dr. Carter proceeds:—

"Mycetoma makes its appearance by a small, flattened, indolent tumour or 'lump,' firm to the touch, little painful, and of slow growth. In the course of a few months raised soft spots, or blebs, or vesicles, arise, which soon burst and let out the fungus-particles; sinuses thus are formed, and persist until all are expelled; meantime the swelling enlarges, or fresh ones appear, and so the disease progresses. The commencement is often on the sole of the foot; or, in the case of the hand, one of the fingers may be first attacked, as a most interesting specimen in my possession shows.

"The natural duration of the disease is prolonged, the cases ordinarily seen being of from four to ten years' standing, and sometimes longer; its termination seems only coeval with exhaustion of the vital powers. A spontaneous cure must, I think, be exceedingly rare, though doubtless within the range of possibility. Some idea of the frequency of this unique affection may be gained from the fact that individual observers in this country have reckoned their cases by the score; one gentleman sent me particulars of 75 cases he had treated, and even in Bombay a year seldom passes without 3 or 4 cases being seen at the Jamssetjee Jejeebhoy Hospital, although the disease is not endemic here. It has only been seen in natives hitherto; the explanation of which is obvious, as they alone go barefooted, and seldom wash the feet thoroughly. Other noteworthy features are the following:—it has mostly a single local manifestation; it is much most frequent in men, and during the middle periods of life, and commonest amongst the agricultural classes; it is not hereditary, or peculiar to any diathesis. In all these particulars, as well as in its endemic character, the fungus-disease resembles the Guinea-worm disease, and is unlike scrofulous affections, leprosy, elephantiasis, etc.; it is indeed a much more serious affection than the Dracunculoid, and merits far more the attention of medical officers in India.

"As to treatment, amputation is a certain cure, so long as every part invaded by the growth is removed; and it is necessary to mark this, as partial amputations have failed."

The second and concluding portion of this interesting paper contains a minute description and natural history of the fungi. There are three varieties, which limited space admits of our merely naming :

—1. The black fungus, occurring in more or less spherical masses, attaining the size of half an inch in diameter. 2. Small masses of cheesy consistence and light-brown tint, formed of an aggregation of granular particles, quite visible to the unaided eye, and resembling poppy-seeds. 3. Countless minute, pink-coloured particles, visible to the eye as reddish grains (like Cayenne pepper), and when magnified exhibiting a bi- or multi-partite aspect of regular arrangement.

The following is on the subject of the natural history of mycetoma :—

“It may be regarded as certain, that the hand or foot becomes accidentally inoculated with the spores of some mould or mould-like cryptogam, which at certain periods of the year—most likely previous to or during the wet season, when all kinds of fungi abound—makes its appearance on the soil of particular localities : the naked, unwashed feet of the agricultural labourer must be peculiarly liable to such contingency ; and it is not necessary to infer the pre-existence of an artificial abrasion of the cutaneous surface, as the spores are quite capable of passing into natural apertures, *e. g.* the sweat ducts. In many specimens I have noticed pinkish streaks in the substance of the skin and subjacent tissue, on the sole of the foot, etc., and on further examination, finding these streaks to contain numerous spore-like cells in various stages of growth, I conclude that they constitute the first stage of development of the disease.

“As to the specific character of the parasite, I was at first strongly inclined to compare the fungus of mycetoma with the ‘rusts’ and mildews which attack so many cereals and grasses, and to ask if it is not possible that the species infesting common Indian grasses, etc. (*e. g.* sorghum, maize), if transplanted into the human foot, might not give rise to the disease ; but more recently, as the result of further inquiry, and in deference to the opinion of the Rev. M. J. Berkeley, our great British authority, with whom I have had the advantage of corresponding on this subject, I am inclined to surmise that the human fungi correspond to those imperfect states of ordinary moulds, etc., which have been distinguished by the term ‘sclerotia.’ Under certain unfavourable circumstances, the mycelium of the mould ceases to put forth the organs of fructification, and assumes the form of a firm, compact, cellular substance, capable of resisting adverse influences, but also susceptible, under more favourable circumstances, of again developing into the normal or fundamental species,—a phenomenon essentially analogous to what occurs in the lowest forms of animal life, and, in a far less degree, to the hybernation of some of the higher.

“Now it happens that on several specimens of mycetoma, placed in spirit or water shortly before the monsoon season, a red mould has appeared on the exposed surfaces, whilst other preparations similarly placed have not shown any such appearance ; again, fungus-particles from the foot, set in moistened given

rise to the same mould, whilst plain rice-paste, placed side by side, has been either unaffected or only yielded common forms. I have recently ascertained this fact with respect to both the chief varieties of the disease, and it throws clear light upon the origin and nature of this destructive parasite.

"Mr. Berkeley's opinion is to the same effect, and he informs me that he should name this red mould *Chionyphe* (*Mucor*?) *Carteri*; I had not ventured, from want of practical knowledge, to suggest a name, although the fungus was fully referred to by me last year (1186).

"It cannot be denied that this mould has not been seen in its natural locality, and also that cotton-soil from the affected districts has failed to yield it when moistened and exposed to air; but the observations and experiments that have been made are as yet too few and incomplete to enable us to speak positively on this part of the subject.

"Did space permit, I should gladly point out the numerous analogies that exist between this unique parasitic affection and other entophytic and entozoic diseases, all of which, it seems to me, to transcend, in both interest and importance; but I trust enough has been said to afford some idea of its appearance and characters.

"*Note*.—Further information may be found in the last three volumes of the Transactions of the Medical and Physical Society of Bombay, especially No. 6, and Mr. Berkeley has just published, in the 'Intellectual Observer,' a short description of the fungi, based chiefly on my memoirs, and illustrated by figures which, to a certain extent, agree with my own, but partly differ; the characters of *Chionyphe Carteri* are laid down as follows:—"hyphasmate ex albo flavo rubroque; sporangiis demum coccineis; sporis breviter fusiformibus."—*Brit. and For. Med. Chir. Rev.*, July, 1863.

ART. CXV.—*On the Health of the Troops serving in China.*

Sickness and Mortality.

"The average strength of the European troops throughout the year was 6145 men, among whom 10,614 admissions into hospital and 220 deaths occurred; 18 of the invalids also died on their passage home, or at the Invalid Dépôt, making the total mortality 238. These numbers give the ratio of 1727 admissions and 40·56 deaths per 1000 of mean strength, being considerably under the proportion in 1860.

"The average strength of the Native troops employed was 3128; the cases of sickness among them amounted to 3958, and the deaths to 89, being in the annual ratio of 1265 and 28·45 per 1000 of the strength. The former is more than one-third, and the latter is $3\frac{1}{2}$ per 1000 under the ratio of 1860.

"In examining the details of the sickness and mortality, we shall, as in last Report, divide the force into the portion serving in Southern and that in Northern China, including in the former Hongkong,

Kowloon, Canton, and Shanghai, and in the latter Tien-tsin and the Taku Forts.

" Southern China.

" I. WHITE TROOPS.

" The average strength of the European troops in Southern China was 3022; the admissions into hospital were 6209, and the deaths 61, being in the annual ratio of 2054 and 20·19 per 1000 of the strength. It is impossible to apportion correctly to the troops in South and North China respectively the number of invalids who died on the passage home; but if one-half of them be added to each, the ratio of deaths in Southern China would amount to 23 per 1000 of the strength. Compared with the results of the two preceding years, there has been a reduction in the admissions to the extent of nearly one-fourth, and in the deaths, within the limits of the Command, of upwards of one-half.

" There has been a great reduction both in admissions and deaths in paroxysmal fevers, and the group comprising dysentery, diarrhœa, and cholera.

" There has also been a reduction in the amount of ophthalmia and rheumatism; but a considerable increase in the prevalence of continued fevers, though without any corresponding rise in the mortality. Dr. Currie, the principal medical officer, attributes the reduction in the diseases of this class partly to the coolness of the season, and partly to the improved sanitary condition of the barracks. No cases of epidemic cholera occurred during the year, and remittent fevers, which caused 47 deaths in 1860, proved fatal in only 9 cases in 1861.

" II. NATIVE TROOPS.

" The average strength of native troops in the South of China throughout the year was, 2890; the admissions into hospital among them were 3717, and the deaths 87, being in the annual ratio of 1286 and 30·10 per 1000 of the mean strength. These results show a decrease of upwards of one-third in the sickness, and one-fourth in the mortality, compared with the average of the two preceding years. The admissions have been lower, but the proportion of deaths nearly one-third higher than among the white troops.

" North China.

" In the middle of November, 1860, upon the removal of the expeditionary force from the North of China, a large garrison was left at Tien-tsin, with a detachment at the Taku Forts. In October, 1861, it was reduced by the withdrawal of a battery of artillery, the 2nd Battalion 60th Regiment, and Fane's Horse; and in November of another battery of artillery. Tien-tsin was finally given up to the Chinese in April, 1862.

" Before entering upon the examination of the details respecting the health of the troops, it appears necessary to make a few remarks

upon the climate of this station. From the date of occupation of Tien-tsin, in November, 1860, till the end of February, 1862, meteorological observations were carefully made by Surgeon Lamprey, of the 67th Regiment.

"Dr. Lamprey thus sums up his description of the climate of Tien-tsin:—'The climate of Tien-tsin may be characterized as follows:—An extremely cold and prolonged winter, and a summer of more than tropical heat. Throughout the year there is an easy progress from one season to the other without sudden alternations of temperature, a remarkably dry atmosphere, and a great predominance of blue sky at all seasons. Dust storms and hot winds are liable to occur at certain periods.'

"We note the remarkable dryness of the atmosphere, the mean degree of humidity in each month in 1861 ranging between 42° in April and 70° in January.

"The number of days on which rain fell at Tien-tsin, in 1861, was 57, while at Hongkong it was 117; and the quantity which fell was 14·61 and 75·94 inches at each respectively.

"WHITE TROOPS.

"The average strength of the European troops in the north of China was 3113; the admissions among them amounted to 4405, and the deaths to 159, being in the ratio of 1415 and 51·08 per 1000; and if half the deaths among the invalids be added, it will raise the mortality to 54 per 1000, or more than double the ratio in South China.

"The proportion of admissions into hospital has been nearly one-third lower than in South China; but the mortality has been more than twice as high. The excess of deaths has been almost entirely in miasmatic diseases and accidents.

"ERUPTIVE FEVERS.—All the admissions in this group were by smallpox, which prevailed among the troops at Tien-tsin during the six weeks of their occupation in 1860, and continued till the end of March. During that period 34 cases and 4 deaths occurred, of which 19 and 2 were in 1861. The men attacked were all reported to have marks of previous vaccination.

"PAROXYSMAL FEVERS were only one-third as prevalent in the North as in the South, and it is stated by the medical officers that most of the men affected had previously had ague in South China.

"CONTINUED FEVERS have only prevailed to half the extent in the North, but had given rise to rather more than treble the mortality.

"DYSENTERY, DIARRHŒA, AND CHOLERA.—It is to this group that the high rate of mortality by miasmatic diseases in the North is chiefly due; they have caused two-fifths of the whole deaths, and have been twice as prevalent, and nearly thrice as fatal as in South China. Of the 60 deaths, 32 were reported to have been caused by dysentery, 21 by diarrhœa, and 7 by cholera. Their great prevalence and mortality was in the quarter July to September, the season characterized by the highest mean temperature.

"DISEASES OF THE RESPIRATORY SYSTEM were the cause of a large number of admissions at Tien-tsin, chiefly by bronchitis in January and February, in which months the mean temperature was 19·7° and 23·8°.

"ACCIDENTS AND VIOLENCE.—Under this class 20 deaths appear among the troops in the north, but 19 of these ought rather to have been placed among the diseases of the nervous system, having been caused by sunstroke or heat-apoplexy. This affection gave rise to 59 admissions and 19 deaths, most of them between the 17th and 23rd of July: the temperature during that time was extremely high.

"NATIVE OR ASIATIC TROOPS.

"The Asiatic troops employed in the north of China consisted of Fane's Horse, and they remained only nine months in the Command. Their average strength was 318; the admissions into hospital were 241, and the deaths 2. These numbers, when reduced to the annual ratio per 1000 of mean strength, give the proportion of 1013 admissions and 8·40 deaths per 1000 of mean strength.

"On the Extent of Invaliding.

"During the year there were 392 men of the European force sent to England for change of climate, being in the ratio of 63·8 per 1000 of mean strength.

"During the same period the number of the Asiatic troops sent home to India for change of climate was 25, or 8 per 1000 of strength.

"Sanitary Condition.

"After the active services of the war, the European portion of the army left in the country, together with the ordinary garrison of Hongkong, appears to have enjoyed a comparatively high state of general health during 1861; and the observations in the Annual Sanitary Report, by Dr. Currie, C.B., the Deputy Inspector-General of Hospitals, tend, in concise manner, to state that those stationed in the south, alluding to Canton, Hongkong, and on the peninsula of Kowloon (an experimental site of extemporized huts), had been so good during the year, that no unusual causes of sickness or mortality could be said to have been in operation."—*Army Med. Report*, 1861.

ART. CXVI.—*On the Health of the Navy serving in China.*

"The force employed on the East India and China Station in 1860 was somewhat of a mixed character, consisting of screw and paddle-wheel steamers, three sailing vessels, between twenty and thirty gun-vessels and gun-boats, three steam troop-ships, a receiving ship,

a hospital ship, and a brigade of Royal Marines for service on shore, the whole corrected for time amounting to about 8540 men.

"The number of cases of disease was 15,501, being in the ratio of 1815·1 per 1000 of mean force. The deaths were 244, or 28·6 per 1000. The total number invalided 615, or in the ratio of 72 per 1000 of mean force—a reduction of 12 on the ratio of the preceding year. The loss by invaliding for disease of the alimentary canal was large, viz. 222, or in the ratio of 26 per 1000, nearly a third of the total loss by invaliding.

"The following Table shows the death-rate per 1000 of force from disease of the alimentary organs on the several stations of the Navy:—

Home Station	·3
Mediterranean	·7
North American and West Indian	·8
Brazil	—
Pacific	—
West Coast of Africa	2·7
Cape of Good Hope	2·5
East India and China	14·6
Australian	1·1
Irregular Force	·8

"It is thus again apparent that bowel complaints were far more destructive in the force on the East India and China Station than on any other; in fact, against 34 deaths which occurred on all the other stations, there were 124 on the above, or rather, on the Chinese division of the station. Still, the death-rate is not so high as it was for the two past years, when the squadron was employed more to the southward. Next to the East India and China Station, these complaints were most fatal on the West Coast of Africa and Cape of Good Hope Stations.

"The squadron, generally speaking, was employed first in and off the southern ports, or between Singapore and Hongkong; but towards the end of spring and during the summer season, when the germs of endemic diseases come into force, it began to move northward, and finally rendezvoused in the Bay of Talien-whan, at the entrance into the Gulf of Pechili. Here it remained pending preparations for the premeditated attack on the forts at the entrance of the Peiho. The right wing of the battalion of Royal Marines, which had been cantoned in Chusan from the 21st of April until the 10th of June, arrived on the 18th of June, and on the 2nd and 3rd of July it disembarked and encamped on the slope of a hill near the beach, and close to the military force which had previously arrived. . . .

"After the capture of the forts on the Peiho, and the capitulation of Peking, the combined expeditionary force returned, and subsequently the squadron dispersed in various directions, the majority proceeding southward, while others went northward into the Sea of Japan, and several returned to England. But with reference to the influence of climate, it is well to observe that nearly the entire squa-

dron was concentrated in the Gulf of Pechili during the most sickly part of the year.

"*Fevers*.—There were 1089 cases of primary fever, of which 16 were invalided and 15 died. Though the cases, proportionally, were more numerous than during the preceding year, there is a considerable reduction in the number of deaths; it is therefore to be inferred that the disease prevailed in a less aggravated form. There were 1039 attacks of an aguish character, of which 5 were invalided, but none terminated in death. . . .

"During the time the Marines were in the field, though exposed to all the vicissitudes of the weather, sleeping sometimes on the open ground, and making long and tiresome marches on roads almost impassable from mud, they had an abundance of good, wholesome provisions. 'Nevertheless,' the surgeon remarks, 'during that short period (about six weeks) no fewer than 126 additions were made to the sick list; 7 of these were well-marked cases of remitting fever, of which 1 proved fatal; 10 were of an aguish character.'

The '*Impérieuse*,' it is stated, "anchored off the Peiho on the 28th of July, with her crew still in good health. The officers and men were at once employed in landing troops, guns, and stores, in clearing or unloading transports, and building piers. Large detachments were lent to man gunboats, and for several weeks about fifty of the crew were employed in navigating store-junks on the Peiho, above Tien-tsin, and all the Marines were landed to reinforce the battalion on shore. The effect of so much hard labour and exposure to climatic agencies soon became apparent, but with nothing like the force or energy observed on similar occasions in the rivers eight or ten degrees nearer the equator. Febrile attacks, accompanied with the ordinary flux, became numerous, and before the end of the quarter 45 men had been placed on the sick list. 'The fever, although in several instances remittent, was in the main of the continued form, with a rapid pulse, white flabby tongue, and considerable debility; these were the most prominent characteristics. Headache and vertigo were also much complained of. Though the disease was very tractable, and soon yielded to the usual treatment, the debility in some cases was remarkably prolonged. The individuals who suffered most were those who had been employed in gunboats.'

"In the '*Odin*' there were 120 cases of fever of a continued type, but, with the exception of about 60, which occurred during the summer months, when the vessel was off the Pehatang and Peiho rivers, the remaining moiety where of an ephemeral character. In addition to the usual symptoms, the surgeon mentions that tastelessness was a characteristic symptom, and an amount of prostration, both physical and mental, followed the fever, disproportioned to the previous morbid action.

"*Eruptive Fevers*.—There were 32 cases of smallpox, with 4 deaths. Of those attacked, 13 bore marks of successful vaccination.

"*Brain, etc.*—10 men died of disease of the cerebral system.

"*Respiratory Organs, etc.*—There were 225 cases of an inflammatory character, of which 10 were invalided and 5 died.

"Stomach and Bowels—Diarrhoeal-dysentery, the intractable flux of China, was, as usual, far more destructive of health and life than any other disease that attacked the force. There were 3391 cases placed on the sick lists, entailing a loss of 221 men invalided and 116 dead; the former being in the ratio of 25·9, and the latter of 13·6 to the 1000 of mean force. These ratios alone are nearly equal to half the total loss by invaliding and death from all other diseases. The proportion of deaths to the number of cases is somewhat less than on the previous year; it is therefore to be inferred that the disease generally was not of so grave a character.

"In previous Reports on the naval force on the Chinese coast, it has been shown that climatic disease, namely, fever and flux, follow the seasons in the order of their origin and decline; that they almost entirely disappear during the winter months, re-appear in spring, and increase rapidly in virulence and fatality throughout the warm months of summer and autumn, until the cold of the approaching winter again puts them out of existence. This was well exemplified in the years 1841, 1842, and 1843, but more especially in 1842, when an expedition ascended the Yang-tse-kiang as far as Nankin. How far north the same law or influence extended could not then be ascertained with any great accuracy, though there was reason to believe it decreased with the increase of latitude; and whether it existed with the same degree of force on contiguous islands as it did on the mainland, there was not until lately sufficient evidence to form an opinion. Recent experience, however, has shown that the causes which give rise to fever and flux on the mainland of China, south of the 32nd degree of latitude, are either altogether inoperative on the coast of Japan, or exist in a far less potent form; for although both these diseases occasionally make their appearance in vessels stationed in the Japanese waters, they are mostly of a recurrent nature, the sequela of disease originally contracted on the southern part of the coast.

"The following Table shows the number of cases of primary fever, intermitting fever, and dysentery and diarrhoea, put on the sick lists for the respective quarters of 1860:—

Primary Fever	1st quarter . . .	117
	2nd ditto . . .	221
	3rd ditto . . .	611
	4th ditto . . .	140
Intermitting Fever	1st ditto . . .	254
	2nd ditto . . .	265
	3rd ditto . . .	321
	4th ditto . . .	199
Dysentery and Diarrhoea	1st ditto . . .	528
	2nd ditto . . .	949
	3rd ditto . . .	1328
	4th ditto . . .	586

"It is thus shown that dysenteric attacks were twice as numerous during the warm as they were during the cold season; but there is every reason to believe that by far the greatest portion of these

were consequent on exposure in boats and on shore during August and September, when the force was employed in the Gulf of Pechili, but more especially when off the estuary of the Pehtang and Peiho rivers.

"As previously mentioned, the brigade of Royal Marines, though principally employed on shore at Shanghai, and on the expedition to Peking, suffered a good deal from bowel complaints, though not more than some of the ships' companies, which, with the exception of detachments landed at the Peiho, had but little communication with the shore. Altogether, in this body, which averaged about 1000 strong, there occurred during the first quarter 122 cases of flux; during the second, 53; during the third, 288; and during the fourth, 120; making a total of 583, of which 39 died, and 75 were invalidated.

"Of the 116 deaths which occurred from diarrhoeal dysentery, 31 occurred during the first, 25 during the second, 29 during the third, and 30 during the fourth quarter. Though in this instance the deaths were most numerous during the cold season, it is to be observed that in nearly every instance the disease was contracted during the summer.

"*Liver*.—There were 68 cases of hepatitis, of which 9 were fatal.

"*Genito-Urinary Organs*.—Compared with the preceding year, there is a considerable reduction in the ratio of cases of syphilitic disease, owing possibly to a better system of police supervision at Hongkong, and to the men having had less communication with that and other ports where it is known to prevail. Of 649 cases of true venereal, 42 were invalidated, and 1 is reported to have died of dysentery and syphilitic cachexia.

"With reference to Hongkong, the surgeon remarks:—'There has been for some time a sanitary police in relation to the subject of prostitution. The regulations established are excellent; they include a supervision of all licensed and registered brothels, and a medical inspection of their inmates at stated intervals: diseased females are at once sent to the Lock Hospital until they are cured.' The law, however, about the close of the preceding year, had become practically inoperative, for 'at least a third of the men of the 'Chesapeake' who went on shore were infected with the disease in one form or other.' At last it became necessary to bring the question before the colonial authorities, when regulations of a more stringent nature were adopted, and with success, for a reduction in the number of cases soon afterwards took place."—*Naval Med. Report*, 1860.

ART. CXVII.—*Naval Medical Contributions, No. II.*

By ALEX. E. MACKAY, M.D., F.R.S.E., ETC.

Dysentery.

"The area of the most virulent operation of dysentery is confined

within such narrow geographical limits, as, practically, to give this disease but little statistical importance, excepting on the East Indian and China Station. Even on that station, moreover, the limits of its operation are so narrow as to be very much confined to the Canton River and its immediate vicinity. If it be true, then, that its ravages are confined within so limited a circle, and if it can be shown that the total loss to the public service is greater from this disease than from any other whatever, some conception will be obtained of the fearful havoc it creates within the sphere of its pestilential influence, and of the justice of its claim to be considered perhaps the greatest scourge of the naval service."

It is shown from the Statistical Returns of the health of the Navy for 1856, '57, '58 and '59, that of the 567 deaths from dysentery during those four years, 500 occurred on the East Indian and China station alone, and, on the same station, 610 of the invalidings occurred out of the 683; or, to state the matter as regards the mortality differently, and according to the plan adopted by Dr. Bryson in the Return for 1859:—

In 1856, in a force of 3410 men on the East Indian and China station, there were 48 deaths from dysentery, against 16 in 48,320, on all other stations.			
In 1857, in a force of 7,080 there were 123 deaths, against 18 in 35,390.			
In 1858, in a force of 11,300	239	13	
31,820.			
In 1859, in a force of 6,600	90	20	
46,225.			

Dr. Mackay divides dysentery into two varieties—*sporadic* and *epidemic*; the one being a simple inflammatory disease, chiefly affecting the large intestine, the other occurring generally in a subacute or chronic form, and always engrafted on a constitution suffering from some depressing influence, such as malaria or scurvy.

Sporadic Dysentery.—Its ordinary causes are first considered,—errors in diet, chills, putrid emanations, intemperance; next, those which have an especial bearing on the habits of seamen. On this last point we quote the following paragraph:—

"It is much to be regretted that no under-clothing of a character adapted for tropical climates has yet been supplied to the seamen. By a salutary regulation or custom of the service, every blue-jacket is obliged to wear a flannel shirt next his skin; and that this article of dress is worn, is carefully seen to at every inspection by the officer of the division to which he belongs. Unfortunately, however, the flannel which is supplied by the service is of such a quality as to be almost quite unbearable in the extreme heat of the tropics, where the skin becomes so irritable as frequently to resent almost any clothes whatever, and where prickly heat (*lichen tropicus*) makes a fearful addition to a man's sufferings. So far as I am aware, there are not two kinds of flannel supplied to the service, and although for temperate or cold climates the flannel now issued may be borne in the colder seasons, I can imagine no torture more severe

than having to wear this material during the fearful heats which prevail in the hot season in the Canton River and at Hongkong. The dress of the man-of-war's man in the tropics is a pair of white trousers, a white frock or jumper, and this flannel shirt. The trousers are made, as a rule, very tight round the waist, no braces being used, and the frock and the flannel are tucked inside them. A jumper is a short kind of loose frock, worn outside the trousers. In the evening, when the order to 'shift clothing' is given, a blue serge frock takes the place of the white frock, and instead of the white trousers a pair of blue trousers, sometimes made of what is called dungaree, is substituted.

"In the hot, close evenings in the tropics, when there is not a breath of wind stirring, the watch on deck may be seen lying in all directions, sleeping, or trying to sleep. Every man is more or less bathed in perspiration. The heat is so insufferable that clothes, however light they may be, appear to be insupportable; and amongst the first things the sailor does before lying down is to pull his frock and flannel up, partly to relieve the tightness of the waistband of his trousers, partly to allay the irritation caused by the perspiration which has collected there in such quantity as to keep that part of his dress quite wet, and partly with the hope of procuring a little coolness. In this state he lies down, and soon in his restlessness he pulls the frock and flannel a little higher up, and at length about a hand's-breadth of the body above the waistband is exposed. Every part of the skin is perspiring profusely. By-and-by, as he lies sleeping restlessly—for the heat is too great to admit of calm, quiet sleep—a gentle air steals along the surface of the water, and passes over the sleeper. To those who are awake it is deliciously refreshing, and the atmosphere is felt to be sensibly cooler. The sleeper is lulled by it into a deeper sleep. The breeze, as it continues, freshens a little; the exposed skin of the sleeper, from being hot and bathed in perspiration, becomes dry, and finally chilled; and in a very short time he awakes griped, and perhaps sick, and so commences, very frequently, an attack of sporadic dysentery. This is by no means an uncommon source of this form of the disease. In the same manner also, after any severe exercise, either aloft or at the guns, the amount of perspiration which collects at the waistband is so great, that the trousers and frock in the neighbourhood of that part of the dress are literally soaking wet. The sailor, when the drill or duty is over, will have recourse to any means that appear most readily available for cooling himself, and the mouth of a windsail, or an open port into which a breeze is blowing, will be looked upon as a great luxury. The effect upon the reeking waistband may be imagined; by evaporation, the parts underneath soon become perfectly chilled, and dysentery is by no means an unlikely result of this thoughtlessness. In all climates (for I have seen this occur when we were in the vicinity of icebergs), a very possible cause, also, of sporadic dysentery is the exceedingly common and most objectionable custom which prevails among seamen, of jumping out of their warm hammocks at night and running up to the 'head,' with no clothing on them but

shirt and flannel. Dysentery is only one of the very many serious affections which are liable to arise from this practice, than which there is none so commonly winked at on board ship, which is fraught with the most disastrous consequences, and which ought therefore to be put down in the most determined manner."

Epidemic Dysentery.—Our author points out that this form of dysentery is, pathologically, in no respect different from the sporadic, except in its being engrafted on a cachectic state of the system:—

"Epidemic dysentery prevails to a greater or less extent in all countries in which malarial fevers are endemic. It will be found to abound in largest numbers and in its greatest intensity in those malarial districts where there is a very high temperature with moisture, and a liability to alternations of heat and cold. In the Canton River and its immediate vicinity these conditions exist in a very exaggerated degree, and that locality is, in consequence, the most prolific of periodic fevers and dysentery of any in the world."

The Statistical Returns of the Navy show that of the 17,041 cases of fever occurring on the China Station during the four years before alluded to, 10,084 were cases of intermittent fever; and allowing one-third of the remaining 6985 cases of continued and remittent fevers to be of malarious origin, we shall have 12,403 cases of malarious fever on that station alone:—

"One probable, indeed the most probable, source of the notorious pre-eminence which the China Station has obtained for fever and dysentery, is the circumstance that a great deal of the service there is river-service. Next to being stationed on shore in a malarial district, nothing can be more pernicious than being stationed in a river surrounded by marshy emanations on every side.

"Another circumstance which may tend to act injuriously upon men exposed to malarious influences is the depressing nature of the service upon which they may be employed. In the Canton River the duties of the men are mostly of a very monotonous character. The treacherous and hostile disposition of the Chinese forbids anything like exercise on shore, and day after day and week after week pass in the same dull routine of duty on board. When to this state of matters are superadded the extreme exhausting heat, from which, during the hot months, there is no relief by day or night, and the baneful influence of the poisonous atmosphere, the system is very liable to be reduced to such a degree as to be readily and most fatally acted upon by any of the ordinary excitants of disease."

Two very notable and fatal cases, illustrative of the effects of depressing influences, occurred in Dr. Mackay's experience, and are given in detail, with the following remarks appended:—

"Both of these cases, while they illustrate the dangers attendant upon depressing mental influences in malarial districts, also serve to show how insidious the approach of this form of dysentery may be. It is in the very nature of the agencies which constitute what is called malaria, to exert their influence in an insidious manner. It is true they may act very suddenly and very violently, as has been frequently noticed in the more malignant forms of the malarial fevers of Hongkong, and especially of Algeria, as noted by Maillot

(‘*Traité de Fièvres Intermittentes*’), but this is not their common mode of action. There is a very close resemblance indeed between the action of malarial poison upon the human body, and that which is known to obtain in the case of exposure to the influence of material poisons. The blanched and cachectic appearance of the workman whose occupation exposes him to the deleterious influence of mercury or lead, is very much the same as that presented by the person residing for a length of time in a malarial district. In the latter instance, the natural healthy appearance becomes changed; the countenance becomes more or less blanched and sallow; the disposition is liable to become peevish, or morose, or uncertain; the appetite becomes capricious, and very often wanting; and there is a conscious falling-off in vigour both of mind and body. So long as great care is observed in the mode of living—so long as there is a watchful regard to avoid every circumstance likely to operate as an immediate excitant of disease, and especially if agents are employed which have a known counteracting influence on the poison, the exposed person may for many years, even in notoriously unhealthy localities, escape any very serious ailment. But should he, on the other hand, be careless or indifferent as to the nature of the locality he is in, then, sooner or later, he is almost certain to be attacked with some of the diseases peculiar to malarial districts.”

Dr. Mackay had four years’ experience in the Naval Hospital at Hongkong, and describes a peculiarly insidious and fatal form of dysentery which is often met with at that station. Its cause is suppressed cutaneous exhalation:—

“The result of this is a diarrhoea of so little marked a character that it frequently advances to true dysentery long before its nature is recognized, or even its presence observed. At Hongkong, amongst the civil community on shore, one of the most treacherous and fatal forms of dysentery was frequently ushered in in this way. It began gently and imperceptibly, the bowels being moved rather more than was their natural wont for days and even weeks together, but so entirely without uneasiness, the appetite continuing so good, and the functions of the body apparently acting in so healthy a manner, that the patient continued engaged in the duties of his station, quite unaware that anything was the matter with him. At length, however, a few more stools than usual, with some griping, had the effect of drawing his attention to his condition, and then it perhaps occurred to him that he was not so strong as he used to be. Even then, however, it was seldom the medical man saw the case. The patient would go on treating himself, until at length, when he found he was making no progress, and the medical man was called in, the symptoms of disorganization of the gut were found to be fully established, and the sufferer was either removed from the climate or sank under a fatal marasmus,—an evidence of the extent to which the mesenteric glands and the intestinal lymphatic system were involved.”

Several illustrative cases, with the *post-mortem* appearances, are added; and with respect to these last, Dr. Mackay very justly remarks:—

"Although there is no rule in the matter, it may be laid down as a fact of most common occurrence, that the longer exposure there has been to the malarial poison, the more aggravated will the *post-mortem* appearances be found in persons dying from dysentery. It will also be found that if, superadded to this long exposure to the malarial poison, there be much fatigue and exposure to the direct rays of the sun in such a climate as China, the morbid changes will have a tendency to run on to gangrene."

As an illustration of this there is given a case, which concludes this very able and instructive paper.—*Edin. Med. Journ.*, Dec., 1863.

ART. CXVIII.—*Report on a Hospital at Tien-tsin for the Treatment of Sick Chinese, established by the British Army of Occupation, January, 1861.*

In this Report, Dr. C. A. Gordon, Deputy Inspector-General, supplies us with some interesting details of a temporary hospital, to which Dr. Lamprey, Surgeon of the 67th Regiment, gratuitously gave his services. There was soon ample evidence to indicate the success of the institution; its fame extended far and wide, so that before the end of February the narrow street leading to it became daily crowded by persons afflicted with diseases or injuries, long before the hour of the medical officer's morning visit. Women, contrary to what was at first believed, came in great numbers, and in perfect confidence, for relief,—in many instances, for diseases special to them.

By far the most numerous classes of disease were those of the eye and of the skin.

"It was evident," says the Report, "that a very large proportion of the lower orders in this part of China are the subjects of ophthalmia—a disease attributable in part to the manner in which they crowd together in their rooms, in part to their extremely filthy habits, and in part to the great extent to which the constitutions of the people are tainted with scrofula."

One form of eye-disease that abounds consists in turning-in of the eyelids, so that the continual irritation caused by the eyelashes rubbing against the cornea excites inflammation, and ultimately opacity and loss of vision. This disease, unless far advanced, is easily cured by operation. The operations for cataract met with a large measure of success. Among the skin-diseases is one which we here see for the first time; "it consists of a spreading form of ulceration, destroying merely the cuticle, and occasioning very great contraction of the neighbouring parts as it passes onwards; thus, when the neck or face is its seat, the appearance given to the features of the sufferer is absolutely hideous." This appears to be a form of lupus, and is associated with the scrofulous diathesis.

In many cases of opaque cornea, Dr. Lamprey used, with great

success, the undiluted nitric acid, which was applied by means of a fine point, and, almost instantaneously, cold water being used to prevent its action from extending. This treatment, which seems to be new in such cases, was found equally successful in cases of pterygium.—*Ind. Annals of Med. Sci.*, No. 16:

ART. CXIX.—*Medical Results of the recent Chinese Wars.*

By T. NELSON, M.D.,
Staff-Surgeon, R.N.

This is a very suggestive and interesting paper, founded upon the data furnished by the Medical Returns of the Navy for the year 1859. "So favourable an opportunity," writes Dr. Nelson, "of comparing the influence of two separate but similar expeditions, upon the health of those exposed to them, very rarely occurs; and it has been accordingly thought worthy of more special attention and inquiry, in order, as far as possible, to observe what progress has been made in the general treatment of diseases in the East, and in the development of those measures which are considered best fitted either to ward off their presence, or, at all events, to mitigate their destructiveness. In order, however, to draw the comparison correctly, and to extract from it such lessons as it may be able to convey, a few briefly-expressed historical facts must be recalled to memory, along with certain collateral circumstances, so as to place the whole subject in a well-defined and perspicuous light."

The first Chinese expedition began operations in June, 1840, and was brought to a conclusion, by the treaty of Nankin, in August, 1842. The second series of warlike operations began at the close of 1856, and terminated for a time with the treaty of Tien-tsin, in July, 1858. They re-commenced in June of the following year, and ended finally in 1860, under the walls of Peking.

Dr. Nelson next points out how different were the circumstances under which the two expeditions were initiated. The chief difficulties of the first expedition consisted in our want of knowledge of the country, and of its military resources; of the climate, our experience was limited to one point, Canton; and our nearest sources of supply for food and stores, were the distant British settlements of Trincomalee and Singapore.

"In the face of these difficulties the Chinese expedition of 1840 was undertaken, and was conducted, after a series of arduous exertions, to a successful close. Those who are familiar with the events which marked it, will readily admit that the efforts it demanded were heavy and harassing; that the hardships and exposure it entailed were very great; and that its achievements were both brilliant and substantial. Like other expeditions before and since, it had to pass through its phases of mismanagement and vacillation. By sad



experience, its leaders had to learn how obnoxious certain seasons of the year in China are to European constitutions, and how much this baleful influence can be aggravated by exposure to certain localities. Let it be remembered that there were no records in existence of warlike operations against such a people, and in such a region. Where to go, what to do, and how to go about it, had to be struck out on the spot. The errors of to-day were to serve as the beacons of to-morrow, and all reliable information had yet to be gathered together, whether it related to the nature of the country, the character of the people, and, what most concerns the present remarks, the climate and the endemic diseases which prevailed."

After glancing at the more prominent achievements which were effected under these circumstances, and pointing out the trustworthy character of the admirable Statistical Reports of the Navy, from which the materials for the proposed comparison are drawn, Dr. Nelson says of the first expedition:—

"In order to form a correct idea of the actual increase of sickness occasioned by a state of war, it will be necessary first of all to observe what was the average amount of sickness during peace. For this purpose, we have only to refer to the Reports from the East for the year immediately preceding the outbreak of hostilities, viz. 1839.

"The mean number of officers and men employed for that year was 2050, and the cases of sickness of all kinds which occurred amounted to 3066. Exhibited in another form, this gives the ratio of 1495·6 for each thousand. Of these cases, 45 were invalided, and 25 died. From this last number have purposely been excluded accidents by drowning, in which climate had no concern.

"If we place these numbers in juxtaposition with those furnished by the two subsequent years, it will be seen at a glance how rapidly, by a state of war, disease and death assume formidable proportions.

Year.	Mean strength.	Diseases of all kinds.	Ratio per 1000.	No. in-validated.	Ratio per 1000.	Dead.	Ratio per 1000.
1839 ...	2,050 ...	3,066 ...	1495·6 ...	45 ...	22 ...	43 ...	21
1840 ...	3,330 ...	5,871 ...	1763·1 ...	60 ...	18 ...	111 ...	33·3
1841 ...	4,840 ...	8,816 ...	1821·5 ...	159 ...	32·8 ...	290 ...	59·9
1842 ...	7,330 ...	16,375 ...	2243·2 ...	170 ...	23·3 ...	376 ...	51·5

"The amount of sickness which prevailed from 1840 till 1843 on the Chinese station was indeed formidable, and produced an effect on the minds of Englishmen at home which can yet be readily traced in their estimate of the Chinese climate. As is justly remarked in the official Report by Dr. Bryson, 'The mischief inflicted by it is by no means comprised in the number of deaths recorded. Many who, apparently, became convalescent, or who returned home invalided, carried about with them the smouldering remains of serious organic disease, which broke out afresh on their return to their native land, and ultimately consigned them to premature graves.'

"The contrast between the proportionate number of deaths from disease alone in 1839 and 1841—namely, 12 per 1000 in the former,

and 57 per 1000 in the latter—is sufficient to impress with sadness the least thoughtful mind on the inevitable consequences of a state of war.”

Dr. Nelson enters with great minuteness into an examination of the medical history of the second expedition, in which advantages were enjoyed unknown to the first one.

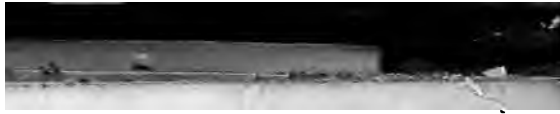
“Under these favourable circumstances, to say nothing of the assumed progress of medical science, there existed something like a right to infer that the medical statistics of the second expedition would exhibit a marked diminution under every head of the Table already quoted, and thus show the value of all the advantages we had enjoyed by the decided progress made in maintaining a much higher standard of health amongst the men, and in neutralizing more effectually the consequences of those diseases which it was beyond human means to prevent.

“Unhappily, a conclusion so flattering, and seemingly so reasonable, like many of the hypothetical class to which it belongs, bears but indifferently the test of facts. On referring to the Medical Reports, so accurately and so ably drawn up, for the three years during which the second series of hostilities lasted, of which we have returns—namely, 1857, '58, and '59—we extract from them the following Tables :—

Year.	Mean strength.	Diseases of all kinds.	Ratio per 1000.	Invalided.	Ratio per 1000.	Dead.	Ratio per 1000.
1857 ...	7,080 ...	17,595 ...	2485·2 ...	378 ...	53·4 ...	328 ...	46·2
1858 ...	11,300 ...	29,990 ...	2653·9 ...	915 ...	80·9 ...	706 ...	62·5
1859 ...	6,600 ...	15,756 ...	2387·9 ...	555 ...	84·1 ...	322 ...	48·8

“The preceding simple figures at once dispel the pleasing illusion in which we were so much inclined, and with such apparent reason, to indulge. A difference does indeed exist between these and the former figures quoted, but the difference unfortunately happens to be in the wrong direction; instead of even holding by previous precedents, they show a marked increase. The lowest ratio of all diseases in the second considerably exceeds, it will be noticed, the highest point reached in the worst year of the first expedition; while the ratio of invalided cases is more than doubled, and the ratio of deaths touches a higher average than in any former year whatever.”

The causes of such an unlooked-for result cannot be traced either in the nature of the operations carried on, or in the prevalence of any unusual epidemic; Dr. Nelson therefore concludes that the only obvious source of explanation is that furnished by the remedial agents which happened at the two separate periods to be most in vogue. Referring to the records of the first expedition, he shows the comparative success which attended the treatment of dysentery by bleeding, and calomel, and opium; thus, of 2102 treated during 1840-1-2, only 188 died and 60 were invalided; but during 1857-8-9, of 2006 cases treated, 465 died, and 606 were invalided. Although not agreeing with our author in the superiority of the treatment of dysentery in China during the first expedition, in which we had



large experience, we fully concur in his opinion that the subject demands grave inquiry; and as the mortality in the military force was so much less in the last expedition than in the first, it would be interesting to compare the treatment of dysentery by the medical officers of the two branches of the service; for it strikes us that the use of ipecacuanha in large doses in the manner described by Dr. Ewart is more freely adopted in the military than in the naval hospitals, where the "quietism of the day," as our author describes it, seems the ruling practice. After some remarks on the casualties from wounds, Dr. Nelson concludes his paper as follows:—

"The heavy balance which is here shown (alluding to the Tables already given) against the total results of the second series of operations in China, will not, after what has gone before, come upon the reader with surprise. The preceding details will fully have prepared him for this adverse balance-sheet. Amongst the different feelings it is calculated to provoke, those of pity and sympathy will doubtless be most prominent in the minds of the philanthropic at this summary of their countrymen's sufferings and sacrifices. To the medical inquirer alone there will be least cause for gratification; for although he may be able to trace from the effects of the hygienic measures pursued a decrease in the amount of certain forms of intertropical disease, he will nevertheless be constrained to admit that in the therapeutic phase, no progress, to say the least, has been made. The lesson conveyed, however, if not a grateful one, will not be unprofitable if it leads to further investigation, and to the reconsideration of those remedies which have perhaps been too hastily condemned. The statesman and the economist will, however, find cause for pride and gratification in the fact that with a naval force so comparatively small, and yet the chief instrument in the drama, and at a sacrifice, although distressing, still so confined in its incidence, a vast empire, which had been sealed to foreigners since the dawn of civilization, was at length thrown open, not only to Englishmen, but to all the world; and the industry of 350,000,000 of *workers* made available for the general benefit of mankind."—*Brit. and Foreign Med. Chir. Rev.*, July, 1863.

ART. CXX.—*China, from a Medical Point of View, in 1860 and 1861.*

By C. A. GORDON, C.B., M.D.,

Deputy Inspector-General of Hospitals, etc. (Pp. 464. 1863.)

This volume forms a really important addition to the department of military medicine, especially in reference to the diseases of the North of China, of which hitherto we have known so little. Dr. Gordon has availed himself of his stay at Tien-tsin to present us with a minute account of its people, its topography, zoology, and climatology; the special local hygiene, the mortality of the troops,

and the pathology* of the diseases there, all of which information must be of great advantage in the event of future military operations in that quarter. And although it forms no part of the plan of the *Annals* to review works, we venture to present our readers with a short notice of this volume, to indicate its scope and practical character. After some historical notices of China, there is a most interesting chapter on Hongkong, giving its health history from its earliest occupation by British troops. Unhealthy as the island is at all times of the day, it has been remarked that it is most so when the sun is below the horizon,

In 1842 the mortality for the year was, among Europeans, 21 per cent.; among the natives of India, 15 per cent. In 1843 the death-rate among Europeans was 39 per cent.; among the native troops, 11 per cent.; among the European officers, 10 per cent. During some months of this year the mortality was appalling among the European troops, being in October as high as 82·32, and in November 75·84 of deaths to 100 of strength per annum.

In 1844 the mortality declined to 20 per cent. among the European troops, but rose to 25 per cent. among the native troops.

These high rates of mortality have considerably moderated of late years. "Yet," says Dr. Gordon, "it is to be feared the unenviable notoriety must still be accorded to the island, that particular years are still characterized by more than ordinarily severe outbreaks of disease and mortality. Much is, indeed, being done to remove, as far as circumstances will permit, all apparent causes of disease; much success has attended the measures already taken, and hopeful anticipations are entertained in regard to the good effects to health from the establishment of barracks on the promontory of Cowloon. I must express my personal fears, however, that Hongkong will never become other than a very unhealthy station."

The year 1860-61 was a remarkably healthy one, and showed a death-rate among the British troops of only 3·68 per cent., and among the natives of 2·34 per cent.

In Southern China the most healthy months appear to be February, March, and April; the most unhealthy are June, July, and August.

The mortality in China arises almost entirely from fevers and bowel complaints. The following observations are of much practical import:—

"We find in the South of China fevers of all the ordinarily described types; namely, continued, intermittent, and remittent. It is beyond doubt, however, that in all these certain peculiarities are observable, which owe their rise to local causes; thus, although as regards continued fevers, many of the attacks are precisely similar to, and amenable to means that are successful in the disease elsewhere, this is not the type that is here deemed of most importance. Cases are often admitted in which the patient may be described as labouring under febrile cachexia; his surface is hot and dry, he is weak, does not complain of local pain, nor does there seem to be present any local determination; there are no accessions in the

severity of his symptoms, neither, on the other hand, are there remissions; a peculiar paleness pervades his surface, lips, and gums; the colouring-matter of the blood decreases in amount; he has no desire for food; sometimes diarrhœa, at others irritability of the stomach to a great degree; and thus he goes on from day to day, progressing from bad to worse, until, if nothing be done for him, he dies.

"Intermittent fever, as that disease affects the troops here, has its peculiarities also. Its attacks are most erratic, and very frequently having no regular period of recurrence. It differs from the corresponding disease met with in India, inasmuch as enlargement of the spleen, as a complication, is here comparatively rare; while there, in protracted cases, it is the rule. Another peculiarity of the disease is the remarkable obstinacy with which it resists treatment; in fact, the manner in which 'China ague' clings to its subjects, even after they have left the country, is too well known by many of them.

"Remittent fever, as observed by me, was of a less virulent type at Hongkong than at Canton. At the former place the attacks of this form of disease were low and asthenic in their nature; but at the latter, where the men of the 87th Regiment were their subjects, they were of such a degree of intensity, that if the patients were not swept away at once by them, convalescence was imperfect, requiring a removal home, and in many instances with more or less destruction of the cerebral functions. As in India, remittent fever seemed often so closely allied to *coup-de-soleil* that it was difficult to draw the distinction between them; but there was this difference, that the amount of destruction afterwards left in the cerebral functions was greater here than in that country.

"*Dysentery and Diarrhœa*.—These two diseases manifest certain local peculiarities. The former would seem, in the great majority of instances, to come on in the hæmorrhagic or scorbutic form, the odour of decomposition being perceptible from the patient even when first brought to hospital. There is a great liability to death; blood literally pours from the bowel, intermixed with only a few shreds of what seems to be membrane. Although the depraved and dissipated are undoubtedly more subject to this form of disease than the steady and abstemious, the latter are sometimes carried away by it in a very short period of illness during the more unhealthy months.

"It is not the object of these pages to enter into the details of medical treatment of disease in China. This, as a matter of course, must be conducted according to the grand principles that hold good elsewhere. I would remark, however, that in many cases of persons affected with one or other of those just alluded to, and which we may fairly conclude to owe their origin to the existence of powerful morbid influences of a local nature, the fact ought never to be lost sight of, that on the first check being given by remedies to the progress of the disease, it becomes then matter of consideration whether or not perfect recovery is likely to take place unless he be speedily removed beyond the sphere of those influences. I believe,

in fact, that few persons who have suffered from a severe attack of endemic disease in the South of China recover until they have left the country for a time."

Our author gives some interesting observations on the etiology of fevers at Hongkong, showing that not only is there a great similitude between the type of disease there and at Cape Coast Castle, but that a similarity also exists between the geological formations of these two localities.

Chapter III. is occupied with Canton; Chapter IV. describes the voyage from Hongkong to the Peiho, with glimpses at Amoy, Woosung, and Shanghai; and Chapter V. brings us to Tien-tsin, of which there is an admirable general description.

We make a few extracts from subjects of general interest :—

The Temporary Barracks at Tien-tsin.

"As a general rule, the soldiers had each upwards of 350 feet of cubic space; a very few only, in consequence of the peculiar construction of their apartments, having somewhat less than that. Such, however, was the openness of the houses in which they were, that during the winter, when the thermometer during night was often below zero, the air found ingress in gusts through crevices and chinks and through the ill-fitting woodwork, in a manner that gave to the men considerably freer ventilation than was agreeable to their feelings, or beneficial to their health. We know that in tents and huts less cubic space is required for sanitary purposes than in buildings of a better description; and the one-storied houses in which our men were located, were, for the most part, most assuredly not of a nature to prevent ingress of air more than huts of European manufacture would be."

At Tien-tsin the daily rations were as follows, viz.—fresh beef, 1½ lb.; bread, 1½ lb.; tea, ½ oz.; sugar, 3 oz.; rum ½ gill. On two days a week, in lieu of fresh meat, one pound and a half of salt pork, and three ounces of rice, were allowed. Orders were also issued by the officer commanding that each soldier should be provided daily with a ration of succulent vegetables at dinner, and to this precaution may be attributed the immunity of the force from scurvy.

Dr. Gordon defends the issue of a daily ration of spirits, on the ground that the intense cold requires some more powerful fuel to enable the vital powers to maintain the animal warmth than tea or coffee.

Great attention seems to have been directed to the clothing of the troops. When the cold had set in with its full intensity, each person was gratuitously furnished with the following, in addition to the usual warm clothing, viz.—1 fur coat, 2 blankets, 2 flannel shirts, 2 pair flannel drawers, 2 pair woollen socks, 2 pair woollen gloves, and 1 pair long boots. Sheepskin greatcoats were also issued, in such proportions as to enable each man, while on sentry or picket, to be provided with one.

July, 1861, at Tien-tsin.

During this month the rate of sickness attained its highest range.

Among the British the admissions were, 17·51 per cent. of strength, or 210·12 per annum; among the Sikhs, only 10·41 per cent., or in the proportion of 124·82 per annum.

Fevers nearly doubled themselves among the British, but among the Sikhs decreased by one-half. Pulmonic affections somewhat decreased among the former, and were altogether absent among the latter. Diarrhoea and dysentery increased to an alarming degree among the British, but were less prevalent among the Sikhs.

Of the 14 cases of hepatic disorders returned among the British, 8 were icterus. Idiopathic inflammation of the liver seems to be rare in the north of China; but as a secondary affection, liver-disease is frequent, especially in the hot season.

In the great majority of fatal cases of dysentery, *post-mortem* examination reveals more or less numerous and extensive hepatic abscesses; these are, in most instances, deep in the substance of the liver, have not been attended during the life of the patient by any definite symptoms, and, in fact, were not at first even suspected, until their frequent discovery after death drew attention to the circumstance.

In many cases the gradual degeneration of the hepatic tissue into pus has been observed at different stages of the process, from the first period, where the tendency appears in the form of a circumscribed, pale, grey spot, somewhat softened, in the parenchyma of the organ, to its complete stage of development, where deposits of pus, in the form of abscesses, appear as just mentioned.

An examination of the men who, during this month, were seized with insolation, indicates the fact that those of all ages were equally liable to become attacked by the disease. Of those who lost their lives from this cause, 1 was only twenty years of age; and in his case the progress of the disease was so rapid, that he died before he could be brought to hospital from barracks. 3 men of 21 years of age were among its victims, and of those who were more advanced in life were 2 of 34 years of age, 1 of 36, 1 of 40, and 1 of 43. Of the whole number attacked, the majority were young soldiers: several of these were at the time under treatment in hospital on account of other diseases; and, upon the whole, we have on this occasion no grounds for believing that the subjects of this disease were chiefly the dissipated and intemperate.

The treatment pursued was the same as is most successful in the disease as met with in India, and the success which has attended it at Tien-tsin has unquestionably been very great. The advantages of cold affusion became so apparent, that soldiers in barracks adopted it towards their comrades when first seized with the symptoms of the disease; and the remedy thus early applied saved several lives that must have been lost had nothing been done for them until after their arrival at the hospital.

The first occurrence of the disease took place on the 17th of the month, and it continued to prevail during the seven following days, the temperature at this time being very high. During this week there occurred 56 cases among the men; of these, 15 died, 6 were discharged cured, and 35 remained under treatment.

Malaria from Decomposing Animal Matter.

On this subject our author says :—

“I have on previous occasions had practical experience of the occurrence of diseases of the alimentary canal in localities in which decomposing animal matter abounds. A remarkable illustration of this occurred on board a vessel on the homeward voyage from India. A large amount of decomposing animal matter had become soaked with bilge-water; maggots bred in amazing numbers; the effluvia pervaded the vessel to a degree sufficient to change the colour of all the panels painted with white lead. Fever, diarrhœa, and phlegmonous boils occurred among the passengers, few of whom escaped having one or other, or all these complaints. Somewhat similar circumstances have taken place during the past two months (July and August) at this station; the intense heat of the climate has brought about the maximum degree of decomposition in the huge masses of animal refuse that lie about in various directions in and about Tien-tsin, and bowel-diseases have attained their maximum, the number of them in hospital having on several occasions actually amounted to one-third of the entire sick.”

The following is the succession of unhealthiness in the north of China according to months; the most healthy one being placed at the top of the list, the most fatal one at the bottom :—

Month.	Annual Ratio of Mortality.
May	2·04
November	2·10
February	2·40
October	2·41
June	2·77
March	3·12
December	5·16
April	5·64
August } equal	6·48
September }	
January	7·80
July	12·36

Thus it appears that in this extreme climate the hottest month, July, and the coldest, January, were the two most unhealthy of the year.

The general rate of sickness was the least among the black troops, next in extent among the British soldiers, and greatest of all among the officers; all of which is very contrary to what one would have expected.

The average daily number unfit for duty on account of illness appears to have been, among the British, 5·49; the Sikhs, 2·68 per cent. of strength.

	British.	Sikhs.
The admissions annually per cent. would be	155·43	—
The deaths per cent.	5·68	0·80
The ratio invalided	41·8	0·00

This gives the annual loss of the troops stationed in the north of China at 10.59 per cent., a favourable rate compared with many stations in India. In the Crimea, the rate of death was 3 per cent. by wounds, and 18 per cent. from disease, while the number invalided was very large.

It is remarkable that the Seikhs suffered less in health from the extreme cold at Tien-tsin than the Europeans. This, however, agrees with what was observed in the campaign under Napoleon in Russia, the Italian soldiers of the French Army bearing the cold far better than the Dutch.

Dr. Gordon strongly advocates the formation of a sanitarium at Nagasaki, in Japan, for the invalids of our Army and Navy in China.

ART. CXXI.—*Journal of a Political Mission to Afghanistan, in 1857, under Major (now Colonel) Lumsden, with an Account of the Country and People.*

By H. W. BELLEW,

Medical Officer to the Mission. (Pp. 480.)

In this interesting and attractive volume by a Bengal medical officer will be found many medical notes, from which we venture to make a few extracts. Mr. Bellew states, that by the liberality of the Indian Government, he was supplied with four mule-loads of medicines for distribution among those in need of them in the territories to be visited by the Mission; and faithfully does he seem to have executed this charitable duty, although at considerable personal risk; for the native official commanding the escort warned him, that such was the ingratitude of the people, and their hatred of the foreigner, that not one of them was above planting his knife in Mr. Bellew's body with one hand, whilst with the other he took the remedy for his pains and aches. Once he was fired at by some miscreant, a candidate for Paradise; the bullet having whizzed close by his ear.

The Mission started from Peshawur in March of the memorable year 1857, and returned in June, 1858. The greater part of this anxious period was spent at Kandahar, the Governor of which was the heir-apparent, a corpulent, free-living personage, who was thrice dangerously ill and attended by Mr. Bellew, first on account of acute gout, which caused a panic at court; next, on account of carbuncle on the chest, which was freely laid open, after some resistance from the native physicians, who had serious doubts about allowing an instrument worked by infidel hands to come in contact with the blood of a true believer; the last illness was an attack threatening apoplexy, relieved by cupping in the nape. The responsibility of attending the heir-apparent was, under the circumstances, a most serious matter, and demanded not only skill and decision, but great judgment and tact.

At Kandahar, Mr. Bellew opened a charitable dispensary, which was daily attended by crowds of patients; many of them came from great distances to be operated on for stone, tumours of different kinds, and a variety of other surgical diseases and injuries. Mr. Bellew describes many frightful scenes of suffering and misery which he witnessed here from an epidemic of smallpox, which was followed by one of typhus fever. Of the latter, his own native medical assistant died, and how the officers of the Mission escaped is surprising.

Mr. Bellew's labours were unceasing, and it was supposed that he must have had some interested motive in taking so much trouble for the poorest and dirtiest of the common people, whom the Governor himself styled a set of "ingrate dogs."

Whoever desires to ascertain the true character of a native patriarchal government should study this volume; yet so patriotic and so averse to control are these people, that they rather suffer the worst oppression and cruelty of their chiefs, than submit to the rule of a foreign power, however mild and just.

Among the great variety of diseases seen on the line of march from the Indus to Kandahar, the frequency of enlarged spleen and abdominal dropsy was most remarkable. In some instances the spleen had assumed proportions beyond all belief, and completely filled the abdominal cavity, and by its weight impeded locomotion.

In some districts consumption is a very common disease, and is known to the natives by the name of "marz i dikk," or "hectic disease." In a few of the narrow mountain-gorges, near the snow-capped Sufaid Koh, cases of goitre were very common. At almost every halting-place Mr. Bellew's tent was crowded with applicants for medicine and advice. "Amongst the number," he says, "were many who in the morning were arrayed in arms against us, and not a few were sent away without an audience for refusing to disarm on passing inside the line of sentries round my tent."

Around Ghuzni the people are very wretched and poor, and suffer much from intermittent and remittent fevers; the latter are generally attended with hepatic disease and jaundice, and often prove fatal. Ophthalmia and bowel complaints are also of frequent occurrence there.

The following is noted as a "remarkable disease:"—

"At Kilati Ghilzai I met with several cases of a remarkable disease, which I had not before seen; it appeared to be an aggravated form of *Leprosy* that affected the entire integumentary surface, and more or less completely altered the natural appearance of the skin, which resembled a horny, tough, and knobby hide, the surface of which was covered with a scaly white powder. This loathsome disease involved the skin over the trunk and extremities to a greater degree than on the face, and around the joints the skin was traversed by deep fissures and cracks, which were constantly moist with a thin bloody exudation, produced by the movements of the joints. From what I could gather by inquiries among the peasantry of this district, it appears that the disease above described is not at all uncommon, though in various degrees of severity, among the nomads and desert population of the plain country, extending from this to Herat."

Effects of Tobacco-Smoking.

"The effects of tobacco-smoking, as practised in this country (as indeed in most Oriental countries), are most injurious, not only to the nervous system generally, but to the lungs in particular. No confirmed smoker is free from a form of chronic bronchitis, painless in itself, yet accompanied by a profuse expectoration, that must in the long run prove very weakening, not only to the organs themselves, but to the constitution generally. This is also the case pretty generally in India, but not to the same extent as in this country; for there the tobacco is largely diluted with molasses, pounded raisins, etc., which, in a great measure, diminish the pungency of the pure leaf, whilst the water through which the smoke is first passed further deprives it of much of its essential oil."

Muscular Cure for Fever.

"This consists in gently pommelling the body with the closed fists; a process which not only has a soothing effect, but also produces a determination of blood to the skin, ending in a profuse perspiration, that causes a marked alleviation in the febrile symptoms, as well in their severity as in their duration. Frequently when this gentle process proves unsuccessful, a friend or relative ensures the desired effect by stamping or treading gently upon the outstretched arms and legs of the fever-stricken patient. When these mild measures, coupled with the aid of copious draughts of tepid diluent drinks, fail, the 'itaj i post,' or 'sheep-skin cure,' is resorted to.

Afghan Mode of reducing a Dislocation.

"The Afghans, from their rough and hardy mode of life, acquire by experience a number of very practical, though, to be sure, uncouth methods of righting themselves, their horses, and cattle, that may suffer from accidents. Their operations for the reduction of dislocations in the human subject are most original, and, if report speaks at all truly, equally successful. For a dislocation of the thigh, the unfortunate patient is sweated for three days in a dark room, the atmosphere of which is heated by fires kept burning night and day, and the effects produced by this high temperature are increased by drenching the patient with copious draughts of warm rice-water or thin gruel. During the interval that this treatment is enforced on the patient, a fat bullock or buffalo is tied up and fed *ad libitum* with chopped straw flavoured with salt, but is rigidly denied a drop of water. On the third day the patient is made to ride the bullock astride, a felt alone intervening between himself and the animal's hide; his feet are next drawn down and fastened tightly under the animal's belly by cords passing round the ankles. All these preliminaries arranged, the animal is then led out to water, and drinks so greedily and inordinately that its belly swells to nearly double its former size; the traction produced by this on the dislocated limb is sufficient to bring the wandering bone back to its socket."

The method of reducing a dislocated shoulder is quite as curious and interesting. It is managed thus :—the hand of the dislocated limb is firmly fixed as close to the opposite shoulder as it can be by cords tied round the waist ; between the bend of the elbow and the chest is placed an empty “ masak ” (a goat-skin water-bag, in common use throughout Oriental countries as a means of carrying water), which is gradually filled with water ; the weight of this suffices to overcome the resistance of the muscles before they have borne it for a quarter of an hour, and the head of the bone flies back to the socket with the usual sound. Most masaks when full weigh close upon a hundredweight, and many much more than this.

For a reduction of dislocation at the ankle-joint, the injured extremity is placed in a hole dug in the ground and covered over with soft earth, which is firmly pressed down by stamping. The limb is then pulled out by force in this manner,—a rope, with a loop at one end, is fixed tightly to the leg, just below the knee. A man, stooping down, puts his head through the loop and rests the rope on the back of his neck, and then gradually raises himself to the erect posture. By this action the buried foot is drawn out of the ground with the joint returned to its natural position.

Quack Doctors.

“ These people have no regular doctors of their own, and are but seldom visited by any from other countries ; they are consequently the victims and dupes of the priesthood, who are as ignorant and exacting as they are crafty and bigoted. Their chief practice, and also the most remunerative, consists in the vending of charms, the prices of which vary in proportion to the means of the purchaser and the gravity of his complaint. The usual treatment of fevers and rheumatism is by bleeding from the arm, followed by a course of sherbets, of which that in most common use is simple ‘ eau sucrée.’ For chronic rheumatism, enlarged spleen, or abdominal dropsy, the actual cautery is a very favourite remedy. The torture endured under this mode of treatment is very great, and the patience with which it is submitted to and persevered in, without any resulting benefit, is really astonishing. It is not at all an uncommon occurrence to see the unfortunate victims of enlarged spleen, dropsy, and chronic rheumatism, with their abdomens and joints studded with some dozen or more unsightly scars, of the size of a rupee or florin each. In one instance I counted upwards of a score of such scars between the knee and ankle-joints of an old greybeard, who had for years suffered from chronic inflammation of the membrane covering the shin-bone ; in fact, the whole surface of the leg was one mass of ugly scars and open sores, and reminded one of the sights which must have been of common occurrence in England in the times of the barber-surgeons. At Kuoram I was informed by a priest-surgeon that the irritative fever produced by frequent and extensive use of the actual cautery not unfrequently terminated fatally, especially in delicate subjects and in those of tender years.”

ART. CXXII.—*Drink-craving; an Outline.*

By ROBERT BIRD, M.D.,

Bengal Army.

This thoughtful and exhaustive essay, which occupies fifty-one pages of the last number of the 'Indian Annals,' well merits the careful perusal of every one who takes an interest in the moral and physical well-being of the British soldier. It scarcely admits of condensation, but we must briefly notice it here with reference to Dr. Bird's suggestions for the establishment of a Himalayan sanitarium for incorrigible drunkards. Of the great prevalence of drunkenness among European troops in India there can be no doubt; but of its influence in the causation of disease, we think sufficient account has not been taken in the recent inquiries by the Royal Commission on the Sanitary State of the Army in India. Dr. Bird arranges drunkards in three classes—the periodic, the temporary, and the chronic. The temporary form is found in connection with some disease of the body. In India it is often met with in diarrhoea; and in affections of the head, produced by exposure to the sun, it is manifested in the most intense degree. The periodic form our author has seen in connection with the menstrual flow, and, in one marked case, to follow sunstroke. The continued form of drink-craving is that which is met with everywhere in Europe as in India. It is undoubtedly often inherited, and then it reaches its maximum force. After some further preliminary remarks, Dr. Bird proceeds to consider the causes of drink-craving under the following heads:—

Hygiene.—Defective hygienic arrangements he believes to be a frightful cause of habitual excess in alcoholic stimulants, and, through this, of drink-craving. Of two men similarly constituted, he who is well fed, well clothed, and well lodged, is certain—other things being equal—to be a more temperate man, as he will be a more healthy man, than his brother, who is subject to all the opposite conditions. A slatternly wife too often makes a drunken husband, for what he cannot find at home he tries to find, or seeks compensation for, in the spirit-shop. Habitual exposure to physical discomfort is another cause. Drunkards abound in badly-drained localities, and in badly-ventilated, over-crowded rooms. Badly-cooked food, an insufficiency of food, and food of an inferior quality, incite men to drink alcohol. Almost all underfed people drink alcohol greedily. It seems also that certain kinds of food excite the alcoholic appetite; thus a diet exclusively farinaceous, as oat-meal or potatoes or rye-bread, seems to have this effect upon the Scotch, Irish, and Russians, although something may be owing to the dyspepsias which affect these peasantries, and to the climate also.

Climate.—It is curious to examine and compare the different substances employed by different nations to gratify their love of stimulants. Within, and immediately without the tropics, opium, Indian hemp, tobacco, and betel-nuts are the substances most approved of by all, except those in whom the appetite for stimulants is strongly developed. As we journey towards the Pole from tropical re-

gions, we discover that light wines, strong wines, and spirits, in the succession named, become the ruling stimulants in the countries through which we pass, until we arrive at the Polar regions, where it is seen that alcoholic drinks are naturally abandoned for butcher-meat, fats, and oils. Tea, coffee, and tobacco are stimulants which are relished in an equal degree nearly all over the globe. Race, no doubt, also affects a people in its relations to stimulants; for it may be broadly affirmed that those nations of modern times which have manifested a continued impatience of despotism, and a progressive affection for social and religious liberty, are more given to strong drinks than nations of opposite tendencies.

Occupation.—The influence of this cause has been long acknowledged, but still demands inquiry, and Dr. Bird urges the appointment of a Commission to carry out the investigations, the question being one of the greatest moment, and intimately mixed up with the moral and physical well-being of the State. He enumerates the following classes of trades or occupations in the order, according to his belief, of their liability to suffer from the condition of drink-craving:—

1. Occupations followed in the midst of temptations to drink excessively. Instance: innkeepers and publicans.
2. Occupations followed in badly-ventilated localities, and requiring great muscular exertion. Instance: coalwhippers.
3. Occupations followed in badly-ventilated and over-crowded apartments, but requiring little muscular exertion. Instance: London journeymen tailors.
4. Outdoor occupations requiring little muscular exertion: masons and bricklayers.
5. Indoor occupations of a sedentary nature: clerks.
6. Indoor occupations of a non-sedentary nature: shopkeepers.
7. Outdoor occupations in rural districts, requiring great physical exertion: farm-labourers.

Age.—The result of Dr. Bird's observation is, that by a natural law, the appetite for stimulants increases with puberty, remains stronger through young and middle life, and declines in old age. Dr. Hutcheson's remark, that drink-craving sometimes appears at the critical period of a woman's life, supports this statement.

Mental Constitution.—All the qualities which lead men within the influence of the temptation to drink alcohol in excess in some form, are doubtless indirect causes of drink-craving; such are good-fellowship and certain accomplishments. It is commonly believed that men take to drink because they are unhappy. If the unhappiness depend on physical discomfort, then the belief is well founded; but purely mental unhappiness, although a frequent cause of occasional, or rather, temporary drunkenness, our author believes to be a very rare cause of drink-craving. Dr. Macnish enumerates genius amongst the causes of the love of stimulants,—Addison, Sheridan, Byron, Poe, Burns, and Coleridge were all given to strong drinks; but all, with the exception of Addison, were possessed of ill-balanced minds. Shakespeare, Milton, Bacon, Walter Scott, and John Hunter were of temperate habits.

Near Causes.—Habitual excessive use of alcohol, of all the causes of chronic drink-craving, is the most frequent and the most familiar. In addition to creating or developing by degrees—usually slow—the state of irresistible drink-craving, it engenders certain pathological conditions of the body. Their nervous division constitutes the disease now recognized as chronic alcoholism, the symptoms of which are but too familiar to most medical officers.

Hereditary Transmission.—There can be no doubt that the appetite for alcoholic drinks can be transmitted by parents to their children. To such an extent is this the case, that the children of a drunken parent, or even the grand-children of a drunken grand-parent, require to be carefully watched and educated, to prevent them from falling victims to the habit of drunkenness. A drunken father may not only beget a drunken son, but, through him, he may leaven whole families with the direful affection of drink-craving. Dr. Bird cites some most painful examples. Dr. Home alleges that of 300 idiots in the State of Massachusetts, the immense proportion of 145 were the offspring of intemperate parents. This indicates that the drivelling and staggering gait, as well as the imbecility of the drunkard, re-appear in his children.

Disease of the Body.—Dr. Bird narrates several cases of disease in connection with which he had observed the condition of drink-craving. We can only afford space for the first and most remarkable of these.

"CASE No. I.—Isabella Hay is the child of a healthy mother, and a father who has suffered repeatedly from hæmoptysis. She is now two years and a half old. When about ten months old, she began to suffer from indigestion and diarrhœa, which apparently arose from debility consequent on teething, rather than from errors in diet. The disease proved unmanageable from the beginning. It was possible to check it through the administration of medicine, but not to eradicate it so far as to admit of the re-appearance of appetite for usual food and of digestion. Food of any sort was neither tolerated by the bowels nor by the stomach. Its introduction almost immediately reinduced vomiting and purging. The mother predicted speedy death, and everything foreboded that the prediction would be realized. In the course of treatment port-wine was prescribed, and from the very first borne by the gastro-intestinal canal, and relished by the patient. The infant took it greedily, and very soon began to cry for it, as in health she might have cried for the breast. I ordered the remedy to be given freely, and so strong was the patient's craving for the stuff, that she drank of it daily from twenty to twenty-four ounces. The rumour of this intemperance began to spread, and the child soon became the talk and marvel of the neighbourhood. Once, to satisfy her importunity for stimulants, her father substituted gin for port-wine, and the relish for this immediately displaced the relish for the other. After this, gin became her favourite drink. At this time her pertinacious appetite for alcohol, the ravenous manner in which she consumed it, the debility and peevishness of temper which characterized her before her cups, and the strength and good-humour which characterized her after, con-

stituted this infant a real drunkard. Alcohol was her chief sustenance and delight for several months. By-and-by she began to recover, and as her appetite for proper food and her strength began to return, her craving for strong drink began in equal proportion to decline; until the cold season and her thoroughly restored digestion enabled her finally to dispense with the aid of gin-and-water, and she is now fat, strong, and perfectly sober."

At the conclusion of this section of his subject, Dr. Bird observes:

"This completes my enumeration of the diseases in connection with which drink-craving has hitherto been observed to manifest itself, but I venture to predict that when the minds of men have been fully and properly directed to the study, it will be found that this affection has its origin in, and depends for its existence on, pathological states of the body more varied and numerous, than is believed or even suspected; and this leads me to a consideration of the nature of the condition."

Nature of Drink-craving.—Dr. Salvatori's idea was that the seat of the disorder was in the body, and not in the mind, and that the disorder itself was capable of cure. "My readings and reasonings on this subject," says Dr. Bird, "have carried me even further than this; for they have brought me to believe that drink-craving is only the morbid development of an appetite for stimulants of some kind, which is natural, and has been natural to all men in all ages. This appetite might very conveniently and very appropriately be named the stimulant appetite. It is appeased with other substances than alcohol,—with opium, Indian hemp, betelnut, tea, tobacco, and oil, as I have already hinted at. It is an appetite which gains size and force from its own indulgence, and depends for its full development on physical conditions engendered by habitual excessive use of intoxicating and stimulating substances, and on other causes as yet only partially known. . . . This appetite is one which, like the other faculties, is given to different men in different proportions, and is subject, like them, to the organic laws. It grows with use and lessens with disuse; it can be inherited and transmitted; moderately indulged, it is sanatorially and socially a blessing; immoderately, it becomes a curse to its victim and a social pest. Originally implanted in us for wise and beneficent purposes, it has become in too many instances, through the excesses of ourselves and our progenitors, an agent to fill our prisons and our hospitals."

The temperate Use of Alcohol.—Is alcohol poisonous in any quantity? We all agree that the intemperate use of the stuff is destructive of health and fruitful of disease, but the question of the temperate use appears to have split us hopelessly into two sections. The champions of the one section, amongst whom are Dr. Carpenter and Mr. Miller, teach that except in a very few cases of disease, the smallest quantity of alcoholic liquor acts perniciously on the system; while the champions of the other section, amongst whom are Dr. Lankester and Dr. Inman, say that a certain portion of alcohol is not only not injurious, but that it is a wholesome and comforting addition to diet. Dr. Bird very ably discusses the subject, and concludes by recapitulating his own convictions on this matter:—

1. That a perfectly healthy person is less likely to suffer from the affection of drink-craving than a person who is not perfectly healthy.

2. That the craving for alcohol and other stimulants is, in very many instances, only the expression of a natural and curative instinct.

3. That alcohol in a state of so-called health, if taken moderately, acts beneficially on the system. It will differ in different individuals and in the same individual at different times. In *perfect* health this quantity will be small.

4. That alcohol, if taken immoderately, *i. e.* in quantities more than sufficient to satisfy the natural appetite, does harm to all the tissues of the body, and has a tendency to induce the condition of drink-craving.

Under the head of *treatment*, Dr. Bird states his belief that the affection of drink-craving, like the affection of meningitis or of dysentery, having substance and shape, can be cured. We have looked upon it too much as a vice, instead of a disease in most instances viciously induced.

If chronic alcoholism be present, then we must preface the treatment of the craving by the treatment of this. Marcet believed that he had discovered in oxide of zinc the best remedy for restoring to health, or, at all events, of greatly relieving, the disordered nervous system of persons suffering from chronic alcoholism. If the craving be of the temporary form, the disease, in the course of which it makes its appearance, must influence us in the selection of remedies. In India, where most of the cases are of the temporary form, change of air to Europe is the most certain remedy. Such cases are the most hopeful and most curable. The periodic form is difficult to deal with, and if depending on hereditary causes, may be controlled and directed, but scarcely eradicated. In one instance, where the paroxysms followed an injury to the head, and were preceded or attended by symptoms of cerebral disturbance, Dr. Bird found that the attack could be mitigated or altogether prevented by a brisk purge, a sinapism to the nape of the neck, and a full opiate when the bowels had been freely moved. When the complaint makes its appearance in females, in connection with uterine or ovarian disease or irregularities, then attention must be first directed to their removal. It was in a case of periodic drink-craving, apparently connected with irregularity in the menstrual flow, that Dr. Salvatori first used the *Thymus Serpyllum*, which afterwards, in his hands, proved so efficacious.

Dr. Bird has used the fluid extract of the plant in drachm doses every four hours, in the treatment of those states of body which usually follow a debauch. In two cases especially, when the symptoms on admission presaged the speedy supervention of delirium tremens, the effect of the medicine in re-assuring the nervous system, and in this way inducing sleep, could scarcely be doubted; yet he is inclined to believe that Salvatori has overrated the virtues of the drug.

In one instance of chronic drink-craving, Dr. Bird found that the prolonged exhibition of a pill of opium, quinine, and ipecacu-

anha, was followed by a marked diminution of the strength of the appetite.

Baron Liebig alludes to several instances where the continued administration of cod-liver oil has destroyed the appetite for wines.

It is a matter of public notoriety that teetotallers consume a larger quantity of bread and meat than is consumed by the drinkers of alcohol in some shape, and we may therefore assume that wholesome food, in sufficient quantity, is the most certain antidote to drink-craving when it has followed on hardship and privation.

When drunkenness prevails among the abodes of filth and misery, we must accomplish the cure of the affection by means of the application of sanitary science, rather than through moral persuasion. It is absolutely certain that less drunkenness is found in residences which deserve to be called cheerful than in residences of an opposite character; and this truth ought to influence us more than it has hitherto done when we are called upon to provide accommodation for European troops in India. We supply our soldiers with more than the necessities of life, but we do not supply them with all the necessities of temperance; indeed, it is difficult to do so, and to bring them within home influences and ties.

Within certain limits, one stimulant substance may be substituted for another in the cure of the affection. In the case of the thorough-paced drunkard, when opium satisfies his appetite for stimulants, it should be used freely for a time, or, if necessary, habitually; its consequences being infinitely less disastrous and disgusting than those of intemperance.

It is generally believed that smoking leads to drinking. Dr. Bird's observation and experience lead him to quite a different opinion, viz., that great smokers are rarely great drinkers, and *vice versa*; nay more, that smoking prevents many from drinking so much as they otherwise might do.

Sugar is certainly of use in the cure of drink-craving, for reformed drunkards often recover their juvenile tastes for sweets. And as certain articles of diet are to be sought after, so certain other articles are to be avoided, such as cheese, red-herrings, and ham.

The necessity of sufficient ventilation in the maintenance of temperance, suggests to military medical officers how important it is that they should make effective arrangements for the thorough aeration of the blood of the soldiers committed to their charge. The evil effects of over-eating and too much sleep must be counteracted by incitement to take a part in outdoor games.

But if, on the one hand, we weaken the appetite for alcohol by improving the general health of the patient and the administration of medicines, we must also, on the other, control it by increasing the power of his will, and every agent which contributes to this result should be called into action. The lessons of religion and teetotalism should not be forgotten; and while we point out the degraded condition on which our patient has entered, we may at the same time cheer him with the assurance that his state, though fallen, is not lost, and that by the exercise of resolution, and the aids of medicine and religion, he may be freed from the bondage under

which he groans, and restored to his former place in the social and human scale.

Before, however, very satisfactory results can be obtained from the application of the remedies mentioned, it will be necessary that the patient should be so circumstanced that they can be applied at the discretion of the physician, and independent of the patient's weaknesses and caprices. This can only be the case when the victims of drink-craving are legally committed to a sanitarium specially organized for their cure. The urgent necessity for such institutions has long been felt and proclaimed by the medical profession, and their opinions begin very generally to be shared by the public at home and abroad.

After giving some details of the success of the reformatories for drunkards in the Isle of Skye, Dr. Bird offers the following suggestions :—

"In the European Army in India there are many men chronic drunkards, and who, on this account, pass their lives as patients in the hospitals, or as prisoners in the guard-room. They do no duty, and are sources of great expense to Government, of considerable trouble to their officers, and moral pests amongst their comrades. The discipline and efficiency of regiments would be materially increased if such men were weeded out of them, and I would suggest to Government the advisability of establishing a sanitarium in India for the reception and cure of such characters. This might be located in the hills, and, for financial as well as sanitary reasons, take the shape of a tea plantation. Here daily toil in the open air would be one of the main conditions of the inmates' lives, and regarded as a powerful means of cure; for active outdoor occupation, regularly followed, brings in its train blessings and rewards which cannot otherwise, or with such certainty, be come by. These are, muscular strength, good digestion, a pleasant weariness of body, sound sleep, and a certain placidity of mind, which, in its reaction on the body, is eminently friendly to physical health."

For details of the plan we must refer to the original outline and estimate, which well deserves to be consulted. Dr. Bird says that he would hesitate to send any but incorrigible drunkards to this sanitarium; men whose daily conduct indicated that there existed some physical obstruction barring their return to habits of sobriety. Dr. Bird closes his most interesting paper with the following remarks, which are characteristic of his observant mind :—

"Before concluding this paper, I will briefly allude to the principles of total abstinence. Doubtless they and their advocates have in their time done much good, still I cannot believe that their application is altogether unaccompanied with evil. Their votaries eschew drinking alcohol, but they find their grog—as it is vulgarly expressed—in doing other things, which are not always innocuous to society. Thus I have often observed that some teetotalers* are great scandal-mongers; that others, in virtue of the absti-

* I do not speak here of reformed drunkards, but of those others who profess and follow the doctrines of teetotalism for other reasons than that they cannot resist taking too much when they take a little.

nence which they practise, are vain of and ostentatious about their superior goodness; and others again are excessively libidinous*—pickpockets are so, and they are exceedingly temperate. I have found natural teetotallers, as a whole, to be selfish, uncharitable, and badly qualified for the offices of friendship. But there are various classes of them, and the majority are teetotallers only in name, for when they are not great smokers, they are most probably great tea-drinkers, great swillers of ginger-beer, or great gluttons. I hope to live to see Great Britain more temperate than at present, but never teetotal. If we possess a faculty which discovers and appreciates alcoholic beverages and other stimulating substances, it is but right that it should be temperately exercised."—*Indian Annals Med. Sci.*, No. 16.

ART. CXXIII.—*Sanitary Reports, East Indian Station,
Extracts from.*

Bengal.

"Disregard of some of the more common principles of sanitation might be illustrated by reference to the condition of a large majority of the older stations in Bengal, and of these, by far the most injurious are surface-crowding and defective drainage. This is to some extent attributable to the unsettled state of opinion regarding the principles which should govern a military cantonment, and the antagonism inseparable from the clashing of strategic and hygienic considerations. The arrangements, for example, which enable the smallest number of men to defend a place against attack, are incompatible with that segregation of the force which is desirable on sanitary grounds. In drainage also, the conflicting views of eastern and western sanitarians have contributed to retard the adoption of efficient measures; and till the principles upon which the drainage of inter-tropical stations should be effected have been settled, and the mode of scavenging finally determined on, this must necessarily be the case. Surface-drainage to remove superfluous rainfall, the total prohibition of cesspools and covered sewers, and the deportation of all decaying organic matters, seem to be the measures most generally approved of, and on this principle the new stations are being arranged. It will be well to keep in mind, however, that in all countries it is essential the foundations and floors of barracks should be kept dry by appropriate subsoil drainage, suitable to each locality.

The principle of *Dry Scavenging*, now generally adopted throughout Indian cantonments, will remedy many existing sanitary defects, and secure the troops from such evils for the future.

Rations.—A few suggest a decrease of the animal, and an increase

* "It is a singular fact, that, as a body, the pickpockets are generally very sparing of drink. They are mostly libidinous, indeed *universally* so." (Mayhew's 'London Labour and the London Poor,' vol. iii. p. 315.)

of the vegetable elements of the ration during the hot season; but there is reason to believe the quantity of meat ration is not sufficiently good to justify any diminution in the quantity. Indeed, the practice pursued by the men of adding to the animal portion of their ration may be taken as evidence that the quantity is not in excess of their requirements. The Indian mode of cooking affords opportunity of varying the dinners at the discretion of the men. The results are generally approved of.

The great prevalence of disease believed to be preventable has attracted considerable attention during the last few years, and has in many instances resulted in the adoption of most important sanitary measures, both remedial and precautionary. One of the most noteworthy of these has been the publication of a general order by Sir Hugh Rose, which embodies many valuable observations, and which has been called forth, apparently, by the recent outbreak of cholera in Bengal, during which her Majesty's 51st and 94th Regiments suffered so severely. The Report of the Special Commission appointed to investigate the causes of that outbreak has not been forwarded to the medical department at home, but it is believed the Commander-in-Chief's general order embodies the practical results of its labours, and as it is of great importance to the army generally, it is given here, although of a date posterior to the period embraced in this Report.

Head-Quarters, Simla, 7th April, 1862.

1. Officers commanding divisions, stations, etc., will make themselves thoroughly acquainted with the ground in the neighbourhood of their stations to the extent of twenty miles, with a view to at once selecting sites for encampments in the event of cholera appearing; and care will be taken to ensure these places being always kept in a fit state for occupation by troops, and with a sufficient supply of wholesome water available on each.

2. The officers of the Quartermaster-General's department of each division will prepare a plan of the required extent of country, with the different encamping grounds marked on it, so that when the disease approaches, measures may be at once taken to place the troops under canvas without delay.

3. On the outbreak of cholera in an epidemic form, either in neighbouring villages or cantonments, officers commanding stations will be prepared to move the troops into the selected camps at the shortest notice.

4. As soon as any case of cholera is reported in the station, the troops will be moved into camp, and no unfavourable condition of weather is to prevent this movement being carried out.

5. The force will be broken up into as many detachments as the number of medical officers will admit, allowing one to each party. Should the medical staff be insufficient to afford such medical aid to the several detachments, experienced medical subordinates* will be placed in charge of the smaller or less distant parties.

* These are warrant medical officers, who are known in India as apothecaries and assistant-apothecaries.

6. Officers commanding stations are authorized to call directly for aid from other stations, divisions, or districts free from cholera.

7. The sick, labouring under other diseases than cholera, will move with the force, and share the benefit of removal from the cholera atmosphere.

8. It must be insisted on that all discharges from the stomach and bowels of cholera patients be instantly removed and buried in pits.

9. Strong deodorants are to be thrown into the receiving vessels, as well as into the pits, latrines, and privies.

10. Should cholera follow the troops, they will be moved short distances, at right angles, if possible, to the prevalent wind and track of the disease, every second or third day, care being taken that the marches in no way fatigue the men.

11. The breaking-out of cholera in a regiment or at a station is on no account to cause the suspension of the soldiers' daily amusements and occupations, care being taken that the latter in no way fatigue them; and the commanding officers will use their utmost exertions to develop any recreation or employment of which the effect is to keep the men's minds in their normal state.

12. It often occurs that soldiers, on a visitation of cholera, indulge in the use of spirituous liquors, in the belief that they are a preventive against the disease.

The medical authorities unanimously condemn this supposed remedy as a certain promoter of the disease; commanding officers are therefore enjoined to use their utmost endeavours to prevent so baneful a practice.

13. One of the several cholera antidotes is the early treatment of premonitory symptoms, of which looseness of bowels is a principal one; commanding officers are therefore requested to give the most precise orders on the subject, and to cause all men affected by premonitory symptoms to be placed at once in a premonitory ward.

14. The troops are not to return to cantonments until all traces of the cholera shall have disappeared from the neighbourhood, either amongst the European or native population. The barracks and hospitals will be thoroughly fumigated, the walls whitewashed, and the doors and window-frames painted, before they are re-occupied.

15. The men will be supplied with hot tea and coffee before going out in the morning; they will invariably wear flannel belts; and all precautions must be taken to prevent their remaining in wet or damp clothes.

16. The Commander-in-chief feels persuaded that all officers share his feelings, that when cholera breaks out in a station they should be with their regiments and at their posts.*

By order of his Excellency the Commander-in-chief.

(Signed)

E. B. JOHNSON, *Lieutenant-Colonel,*
Officiating Adjutant-General of the Army.

* On the 23rd of June, 1862, the foregoing general order was supplemented by the following:—

1. On the occasion of an outbreak of cholera, such changes in the diet

There are many questions connected with the etiology and diffusibility of cholera, and the best mode of warding off the consequences of an outbreak when it has occurred, which the tenor of this general order seems to imply have been settled to the satisfaction at least of his Excellency; but, in the absence of the evidence upon which the conclusions on this very important subject are based, we must be content with the knowledge which past experience furnishes, and hope that measures so often tried with advantage by our forces in India, and so precisely laid down by the Adjutant-General in this practical embodiment of what is known on the subject, will be energetically carried out by all who are, or may hereafter be, entrusted with the command of our troops in India and elsewhere.

The prevalence of venereal disease is still a source of regret to both military and medical authorities in India, and the Commander-in-chief endorses the representations of the Inspector-General of Hospitals on the growing necessity of devising a remedy for this evil. The establishment of lock hospitals, which was under consideration in 1861, has not yet been decided. On this subject Sir Hugh Rose writes:—"In my letter of the 13th September, 1861, transmitting the Sanitary Reports from 1st April to 31st December, 1859, I had the honour to remark that the question of lock hospitals was under the consideration of Government, and I beg to state that no decision on the subject has as yet been come to; and I would venture to solicit attention to the remarks of the Inspector-General of Hospitals on the extensive prevalence of venereal disease as one great source of inefficiency among the men, and to the complaints of the medical officers as to the little authority that can be brought to bear on the native prostitutes."

"The Inspector-General strongly advocates the official supervi-

and such other medical comforts are to be allowed to the sick, as the Deputy Inspector-General of the circle, or other principal medical officer, may deem expedient.

2. Wood-fires, if considered necessary, are to be maintained to the windward of the camp.

3. The railway to be used for the conveyance of troops through the infected tract (? when practicable).

4. In wet weather cots are to be carried for all the men, to prevent them sleeping on the damp ground.

5. On the requisition of medical authorities, commanding officers are to indent on the nearest magazine for such additional camp equipage as may be considered necessary, the indents to be countersigned by the Deputy Inspector-General (of Hospitals) of the circle and the officer commanding the station.

6. The Deputy Inspectors-General of Hospitals being the officers specially appointed by Government to judge of the extent to which the recommendations of medical officers should be complied with, the Commander-in-chief desires that their opinion may, whenever practicable, be obtained. In the event of their absence from the station, the opinion of the senior medical officer may be acted upon.

(Signed)

E. B. JOHNSON, Lieutenant-Colonel,
Officiating Adjutant-General.

sion of the women, and the establishment of lock hospitals, and I would venture to express my concurrence with his opinion on this subject."

Madras.

Dr. Beatson, D.I.G., gives an able review of the sanitation of this Command.

"The accompanying Table will give some information on the subject of the relative sickness and mortality in this Presidency during the last four years:—

Year.	Strength.	Ratio per 1000 of Mean Strength constantly sick.	Ratio of Deaths per 1000 of Mean Strength.	Ratio of Deaths per 1000 of Sick Treated.	Remarks.
1858	10,593	81.38	44.56	23.84	For 9 months only.
1859	12,627	67.87	11.80	15.45	
1860	11,199	63.39	17.76	11.76	
1861	10,918	56.69	12.82	9.90	

"On the whole, the average number of sick and the mortality during 1861 are a considerable source of thankfulness, especially when we consider that during that year epidemic cholera made such ravages in the North-West Provinces and in the Punjab; and, moreover, that it was for a time prevailing to an alarming extent in the native town of Madras, while the regiment in the fort, the 43rd Light Infantry, was providentially saved from its ravages; no admission or death having occurred under this head among the men of the corps, and only one admission (not fatal) among the women and children.

"At Bangalore, I regret to say, we enjoyed no such immunity; there having been in the King's Dragoon Guards no fewer than 36 admissions and 16 deaths from cholera, besides 1 death from the same disease among the officers, and 3 among the women and children of the regiment. The outbreak of the disease was here most unexpected, and it was even more difficult than it usually is to account satisfactorily for its appearance."

43rd Light Infantry (Centre Division).

The only British corps during 1861 at this station was the 43rd Light Infantry, and as regards the sanitary state of the corps there are some interesting facts in Dr. Barclay's Report (surgeon of the regiment).

First, as regards mortality. The 43rd Regiment arrived at Madras, on its return from active and severe field-service in Central India, in March, 1860. During the remainder of 1860, the average number of sick was heavy, the men not having shaken off the malarious diathesis contracted at Nagode and other parts of Central India. During 1860, 995 cases of fever were admitted; but out of this large number there was no casualty, and no case of invaliding

under the head of fever. At the end of the cool season of 1860-61 the health of the men had evidently so far improved that they had thrown off in a great degree the stated diathesis, and lost the malari-ous look, although they still appeared weakly and anæmic. However, great consideration was shown to the regiment in the way of avoidance of all long and severe parades, and as many as could be comfortably accommodated were kept at Palaveram, in the neighbourhood. By this latter arrangement, those in Fort St. George had much more barrack-space, and some objectionable rooms on the ground-floor were unoccupied. This latter circumstance, and the comparatively ample cubic space, together with the avoidance of any severe night duties, or long and fatiguing parades, did much to re-establish, comparatively, the health of this fine body of men; although to do so fully will, I believe, involve a total change of climate.

Under the circumstances above-mentioned, the results must, however, be considered as most satisfactory; the total deaths in hospital during the year having been 5, and out of hospital 1. The total deaths were thus only 5·338 per thousand of mean strength. Singular fortune!

Clothing.—The introduction of the loose red serge frock is, I believe, universally considered a very great improvement on the cloth tunic, which latter is scarcely bearable at any of the hotter stations in this Presidency. The serge frock is easy and light, and, being of woollen texture, protects men from the risk of sudden chills; in appearance it is acknowledged to be most becoming; the soldiers, however, still require a lighter texture of woollen trousers. Even at this comparatively cool station (Bangalore), white trousers are too often worn simply because the men have nothing intermediate between the heavy cloth and the calico trousers, and would therefore rather run the risk of the latter than endure the discomfort of the former. The summer trousers used at home and in the Mediterranean, would be a great boon to men in India.

Water.—With regard to water-supply, Fort St. George stands almost unrivalled in this Presidency. The abundance of pure water for drinking and ablution purposes has, I feel certain, had no small share in improving the sanitary condition of the troops in the fort, compared with what it was in former years; while, in such a climate, the unlimited bathing resources are an immense comfort to the men.

At Cannanore, although the death-rate and the sick-rate have both been low in the 66th, it must not be supposed that the men have not felt their nearly five years' residence in the relaxing climate of Cannanore, at which locality anything approaching to cold weather is unknown. When I saw the men in December, 1860, they then showed an approximation to that bloodless, exhausted look which is so visible in men stationed for any time in the steamy heat of Colombo, in Ceylon, the climate and physical aspect of which very much resemble those of the western coast of Southern India. Men long in such climates as these, if called on for any hard work, are utterly unfit for it. I believe this was found to be the case with the 37th,

when brought to Bengal from Ceylon in 1857. In 1847 that regiment came to Ceylon in the highest state of health and efficiency. When reliefs can be effected, regiments should not be left on the western coast for more than three years.

1st Royal Regiment (Secunderabad).

The Sanitary Report of this corps shows a very satisfactory condition of the regiment during 1861, and, the splendid barracks occupied by the regiment having been so frequently described, it is needless to again allude in detail to them in this Report. There are in all twelve blocks of these, as mentioned before: the Royals have eight; and, when the strength of regiments is brought down to the present established standard, nine blocks should afford ample accommodation for a battalion. Almost the only urgent matters now requiring attention in connection with the Trimulgherry cantonment are—1st, the providing not only an ample, but a convenient supply of water; and, 2ndly, completing the drainage. An extensive scheme of drainage was proposed by a committee assembled about this time last year, or a little latter; it was proposed to connect all the latrines with main drains, and by means of water to flush and carry off *everything*. The Supreme Government of India have very fortunately *vetoed* any such experiment. In the first place, the question of the amount of water really procurable has not been satisfactorily settled; it is said there is plenty of water, but it has not yet been produced. There is, fortunately, water enough for drinking and culinary purposes, but for several months the supply for ablution cannot be called plentiful. I am much more inclined to call the supply in March, April, May, and part of June, scanty. It would, for instance, be extremely desirable at such a station as Trimulgherry, and in such a climate as Secunderabad, to have several large plunge-baths for the men; but could they (or even one), with the present water-supply, be filled regularly, except at an enormous expense and with great labour? The principle which the Supreme Government wisely insists must be observed in any drainage scheme for Trimulgherry is, that all the contents of latrines, of urinals, and all refuse and offal from kitchens and barrack-rooms, must be removed, and that the drainage will simply be to carry off surface-water, and refuse-water from bath-rooms and lavatories. This is, I believe, the most judicious arrangement in this country, and especially so at Trimulgherry, where there can be no command of *running* water in sufficient force and quantity to make sewerage safe and inoffensive. Hand-sewerage, as it is termed, is no doubt very repulsive; but it is effectual, and in this country I believe it is the only safe plan; the ordure being carried away to a distance, at least two miles, and buried in trenches, each deposit being covered over by a layer of earth left after excavation for that purpose on the sides of the trench, or, better still, on one side only, leaving the other side free for the night-carts to come up and deposit their contents. When the trench is filled to within a foot or so of the surface, it should be completely covered in, and a new one commenced.

68th Light Infantry (British Burmah).

The sanitary state of Her Majesty's 68th Light Infantry has been, during 1861, remarkably good. The deaths, 11 in number, would be a very low death-rate anywhere (9.99 per 1000), and in a tropical climate this is a most satisfactory one; that such a rate should continue, or be taken as an average one, would be too much to expect; but it is extremely satisfactory to record such a sanitary condition of a regiment in Burmah, the climate of which has been considered as necessarily so inimical to the European. I myself believe that it is not altogether unjustly considered so, for, although the effects of the climate are happily not shown or felt by troops in such barracks, and with all the care that is being properly taken to secure their health and comfort in the several cantonments, the climate of the country generally is a severe and treacherous one to Europeans exposing themselves to its influences; but, indeed, the same may be truly said of an Indian climate generally, when Europeans are exposed to, and not protected from, its influences during the hot and wet months.

Bombay.

The Deputy Inspector-General Mr. Hadaway has attributed the chief sources of the admissions to hospital during the year to climatic causes, to the usual unavoidable exposure of the men on night guards, or at stable duties of the cavalry, while syphilis and its allied affections contributed their generally large quota to the lists. As customarily, the greatest number of admissions occurred during the prevalence of and about the end of the south-west monsoon, when fevers, catarrhs, and bowel affections are most numerous. In the cold season, when the wind was from the north and north-east, diarrhoea, dysenteric ailments, and hepatic affections were the more prominent; whilst, during the months of high thermometric range, and accompanying hot winds, fevers and liver-disease assumed numerical excess.

In regard to the general sanitary arrangements throughout the Command, he represents them as having been, on the whole, as satisfactorily carried out as circumstances admitted; many special measures for improvement, however, being unavoidably deferred on account of want of funds.

He refers to the Conservancy system—a most important ordinance in India—having been generally maintained in good working train at most stations, and to the prospect of its being improved at others where still defective.

“The diet and supplies for the troops are reported to have been as generally good as the conditions at the several stations afforded; but it was thought improvement might be effected at certain seasons, when the quality of the meat is low and deteriorated, in supplementing dhol as a part of the ration—this article being comparatively rich in nitrogenous element. The growth of vegetables, it is stated,

might be accomplished for the troops at many of the stations, where, as yet, no effort in this direction has been established.

Mr. Hadaway concludes his Report with certain sanitary suggestions, which his wide experience as an inspecting medical officer in this Command enables him to put forth, and on the following points :—

“The want of commodious day- and reading-rooms is much and generally felt, and these should be established at each barrack.

“The kitchens, generally, are so devoid of furniture, that the native cooks cut up the meat on the floor. Tables and chopping-blocks should be supplied.

“Steps should be taken for the establishment of hospitals (Lock ?) at every native town in the neighbourhood of troops, venereal being a constant and prolific source of numerous admissions amongst them to hospital, as well as an ultimate cause of undermining many constitutions, and rendering the men, in consequence, much more liable to the influences of malaria and prevailing epidemics.”

Mr. Hadaway objects to the present canteen system, and thinks it should give way to the establishment of a commodious coffee-room for each barrack, under rigid restriction as to the issues of spirituous liquors. He advocates the location of the troops, wherever practicable, at hill stations, and advises resort to sanatoria over sea positions wherever available.

On the subject of the duties throughout the Command performed this year, and the appropriateness of the clothing of the European forces, he has reported favourably in each respect.

ART. CXXIV.—*Reports on the Mortality of Madras.*

By W. R. CORNISH,
Assistant-Surgeon.

In the course of his remarks on the Quarterly Reports for 1863, Mr. Cornish says of the year 1862 :—

“I have noticed in former Reports that Madras is getting more and more unhealthy year by year. The tables for 1862, which have just been completed, and are now nearly ready to send to press, show that the mortality of that year was higher than in any similar period since the deaths have been registered. The total deaths were 14,733, and the excess was due in great measure to the prevalence of cholera, from which disease the total number of deaths were 3633. Reckoning the population of Madras at 450,000, in accordance with the result of the recent census, the death-rate for that year was 32·74 per 1000, or a rate which is very much higher than it ought to be, on a generally healthy coast like that of the east of the Indian Peninsula. In the new and rising town of Cocanada, on the same coast, the ratio of mortality during the same period was scarcely *one-half* that of Madras. The first quarter of 1863 shows no im-

provement as to the excessive mortality in Madras, and I much fear there will be no important change until measures are taken to remedy the deficient water-supply, and to dispose of the sewage and filth in a less objectionable manner than at present."—*Madras Quar. Journ. Med. Sci.*, July, 1863.

ART. CXXV.—*Special Sanitary and Topographical
Report on Kurrachee.*

By SURGEON-MAJOR DR. INGLIS,
64th Regiment.

From this excellent Report we submit a few very brief extracts, with the view of showing how much the Government of India is doing in improving the barrack and hospital accommodation, and how marked and immediate is the benefit arising from this outlay where associated with improved sanitary arrangements.

"Kurrachee may be described as the principal seaport of Scinde, and is situate at the north-west extremity of that province, and therefore of India; though, geographically, it is trans-India, and, properly speaking, not in India. A spur of the southern termination of the Hala range of mountains, extending towards Cape Monze, to the westward, bounds the station to the north-west; while at various distances, up to about seventy miles, the creeks and estuaries of the Indus extend to the south-east.

"Within cantonment limits by the military authorities, Kurrachee and its precincts have become comparatively free from endemic disease—the product of filth and decomposition of animal matter; and while the native town, from its order and superior state of cleanliness, has become worthy of imitation and example to other native cities, with a sensible and appreciable effect on the health of its inhabitants, the non-occurrence of a single case of cholera or small-pox, or of preventible disease in general, among the men constituting my own charge, since the regiment returned to Kurrachee, after some years' absence, entitle me to attribute the superior salubrity of this station and its environs to the great attention paid to sanitary measures.

"The situation of the European barracks at the end of the camp, occupied by the 64th Regiment, may be described as on a sandy plain, over which, at no very remote period, the ebb and flow of the tide must have taken place. It is very open, and, from the calcareous nature of the soil and consequent absence of vegetation, healthy. Opposite the camp, to its sea-face, is a wide expanse of muddy sand, extending from Clifton towards the harbour, and which partakes of the nature of the swamp already alluded to as existing near the town. The sea obtains access to this waste by means of a breach in the sandy spit, which would otherwise connect Clifton with Kramaree. At low water the exhalations from this waste are not

very pleasant, but being from marine decomposition are pronounced not to be injurious to the sanitary state of the troops—a fact which the statistics of the station seem to corroborate. . . .

“I have hinted already at the great care taken at Kurrachee, both external to and within the cantonments, to maintain the health of all the inhabitants and troops by the most strict adherence to sanitary regulations. All the refuse accumulations, including manure and stable litter of every kind, the sweeping of bazaars, barracks, hospitals, and private dwellings, are carefully carried off every day and destroyed by fire in huge furnaces, erected for the purpose, at spots distant, and, with reference to the prevailing direction of the wind, to leeward of the camp.

“The new barracks of Kurrachee were finished in 1853, the regiment first destined to occupy them being the 64th, which, after an absence of about six years in other stations, with a long interval of employment in the field, returned in April, 1859, to its old quarters. I may mention, however, that the new hospital was not finished when the 64th was last at Kurrachee. The whole are constructed of the substantial sandstone already described in the short physical remarks given as abounding in the neighbourhood, and they are admirably suitable for the purpose intended, and may be pronounced among the most perfect barracks as yet built in India.

“*Hospital.*—This building is one of the finest, and best constructed for the purpose, I have seen during a prolonged sojourn in India. It is situate on the left flank of the lines, and, with reference to their sea-front, to the rear and inland, and distant about 600 yards from the nearest barrack. It consequently occupies an open, dry, isolated, and somewhat elevated position, having a free and unobstructed exposure to the prevailing sea-breeze.

“Attached to this hospital is a meteorological observatory, the superintendence of which is under the surgeon of the regiment occupying these lines.

“The female hospital is a separate structure, and to the left of the regimental hospital. It is included in the same railed-in space generally, but its compound is isolated by a partition-wall from the other.

“The drains about the barracks being merely intended to carry off water likely to accumulate from rain, refuse and filth of every kind being daily removed to a distance, are open to facilitate the removal of putrescent or decomposing matter, such as dead rats or other objectionable substances, which, were the drains covered over, might escape notice.

“As the annual fall of rain is small in Scinde, and owing to the soil being of a nature to absorb it quickly, water does not lodge anywhere in the vicinity of the lines, and malarious exhalations are, in consequence, not evolved.

“The climate of Kurrachee is very cool and salubrious in proportion to its geographical position, and may be pronounced very favourable to the maintenance of health among the European troops. It has been subject to devastating visitations of epidemic cholera, but none have occurred of late years; and since the 64th Regiment

returned from field service last April (1859), I have not had occasion to record a single case of this terrible scourge, nor, in fact, any epidemic or disease of infectious or miasmatic origin.

"A great deal of this depends doubtless on the healthy situation of the camp, the excellent barrack and hospital accommodation of the regiment, and the attention paid to sanitary regulations by the care which is exercised in the quick removal of every substance favourable to the evolution of noxious gases. The climate itself is essentially good, however, considering the nearly tropical position of the place. This superior salubrity may also in a great measure be attributed to the prevailing direction of the wind during the summer months—a season when sickness, without the genial influence of the sea-breeze, would certainly be more apparent than it is. The prevailing directions of the wind are westerly, and the south-west monsoon, coming over a vast extent of ocean, without any intervening surface of land, has not its purity impaired by a diffusion of elements productive of atmospheric vitiation, while it subdues the sensible effects of heat, at the season alluded to, by evaporation. The masses of 'cumuli' which roll from seaward and accompany this wind tend also to diminish the vertical action of the sun's rays, and hence at Kurrachee that fatal lesion, 'coup de soleil,' or 'insolation,' so dangerous to troops at other stations in the interior of India, is almost unknown. Very little rain falls in this province, the whole fall during this year being little over six inches, the greater portion of which was in July. The humidity of the atmosphere is of course greatest during the prevalence of the south-west monsoon, the maximum being in September. The maximum temperature in the sun's rays, 108·69, occurred in June, the minimum in January, and registered 88·71."—*Army Medical Report*, 1861.

ART. CXXVI.—*Notes, Sanitary and Medical, on Colaba, Bombay, as a Military Station.*

By WILLIAM HANBURY, Esq., SURGEON,

H.M. 33rd Foot.

"In a paper published in the seventh volume of the Transactions of the Medical and Physical Society of Bombay, I invited attention to a form of fever known to be the direct result of over-crowding and defective sanitary conditions, which occurred at Deesa in 1859, illustrated the marked effects produced on the health of the troops by the removal of these causes of disease, and vindicated the climate from the charge of unhealthiness.

"On the present occasion I purpose to bring forward certain facts which seem to prove that the character of insalubrity which has so long attached to Colaba as a Military Station is to be referred to causes equally preventible, and that the climate of Bombay is not in itself unfavourable to the soldier's efficiency and health.

"I shall be pardoned if I introduce the subject with a few details, showing the unusual exemption from disease which the regiment has enjoyed since the first of these papers was written.

"During the year 1862, the head-quarters of the 33rd Regiment was stationed at Colaba, while two companies were quartered at Ahmedabad, one at Surat, one at Asseerghur, and two at Sattara. The average daily strength of the regiment was 1005, the daily average sick 44, and the number of deaths (exclusive of one case of suicide) 14; the former being in the proportion of 43·8, and the latter 13·9 per 1000 of strength.

"It should be observed that 9 of the 14 deaths recorded were the result of cholera, and I may remark that it is the occurrence of this disease alone which has hitherto caused the mortality rate in the regiment to exceed that of the Army generally in England. Were we at liberty to eliminate cholera from the returns (from which most other colonies are free), and to take into consideration diseases of endemic origin only, the mortality would be reduced to less than 5 per 1000 of strength, whereas it was 10 per 1000 of strength in the United Kingdom in 1860.

"It appears moreover that the average sick-time to each soldier, and the average duration of the cases, were greater in the army at home than in the regiment; in a word, that the soldier in India occupying widely-distant stations proves a higher state of efficiency and greater exemption from disease than are observed in England; and if we further refer to the previous year, the same fact comes out still more strongly, for only 4 deaths occurred from *all causes* out of an average strength of nearly 1000 men."

A Table shows the extent to which disease prevailed, and the influence of season upon health at the different stations occupied by the regiment during the year. The medical history of Colaba as a military station in former years is next examined, and contrasted with the experience acquired in the year 1861-62.

"The head-quarters of the 33rd Foot arrived in Bombay on the 3rd of December, 1861; the average strength during the year was 426; the daily average sick 15·7, or 3·7 per cent. of strength; the mean sick-time to each soldier 13·6 days, and the average duration of the cases 10·8 days. These results speak for themselves; they are not only highly satisfactory and widely at variance with those of former years, but stand out in favourable contrast to those recorded of troops in the United Kingdom, and establish the fact that the soldier has been more effective in Colaba than in the army at home. . . . Moreover, so complete is the absence of disease as I now write, that there is not a single case of fever or dysentery in hospital, not a single man confined to his bed. In a word, of the diseases under treatment, all, except two cases, range themselves under the head of surgical complaints; and I have never known troops in any climate whose physical efficiency was more satisfactory, or who enjoyed greater exemption from serious disease of every denomination."

Mr. Hanbury considers that the result in this instance may be justly viewed as the degree of the salubrity which the climate and

locality *naturally*, and in the absence of disturbing conditions, are entitled to take credit for :—

“Of the conditions thus concerned in accounting for the sickness and mortality in excess of what I have thus assumed as the more natural standard of health, inadequate accommodation was the chief. For while I admit that defective drainage and ventilation were two of the conditions which hitherto to some extent affected injuriously the health and efficiency of the troops at Colaba, and that the improvements which of late years have been made in both were probably followed by corresponding advantages, I must also at once repeat my conviction that to over-crowding in barracks, *per se*, was eminently due the ‘*unhealthy*’ character for which the station has been so long notorious. . . .

“Viewing these facts, then, in connection with the proofs of the unhealthiness of the station in former years already given, and bearing in mind the high state of efficiency and the extraordinary absence of disease enjoyed by the head-quarters of the 33rd Regiment, in which the number of men corresponded more closely with amount of accommodation available, it will be admitted that there is much to justify the conclusion, that to over-crowding almost alone must be attributed a great part of that sickness and mortality for which the station has been so unhappily distinguished.”

Contrary to the opinion generally entertained, Mr. Hanbury considers that the barracks are adequate to the climate, and occupy as healthy a position as the island affords; but in order to maintain troops at Colaba in a state of efficiency, the barracks should never be called on to accommodate more than 450 men. He thinks, however, that the satisfactory results obtained in the 33rd Foot are partly due to the attention paid to sanitary arrangements, as well as to the fact that the purity of the barracks was preserved by lime-washing the walls every week to a height of three feet above the floors. From the position and climate of Bombay, our author is convinced that it is not *naturally* an unhealthy island; and he points out its many advantages—the refreshing land and sea-breezes, the high tides which provide for the effectual removal of sewage matter, the heavy monsoon rain-fall, which washes off surface-filth, and even the uniformly high temperature and small range of the thermometer have their merits, in limiting the prevalence of chest affections.

“Experience,” says this able writer and observer, “indeed proves that persons whose comfortable condition implies the possession of good houses, and protects them from the evils of over-crowding, etc., in low, filthy, ill-drained, and closely-populated localities, enjoy good health for many years, provided they are careful to lead prudent and tolerably active lives; and if, notwithstanding this, the general morality stands high, surely it is illogical in the extreme to connect the fact either with the climate or the geographical position of Bombay.”—*Trans. Med. and Phys. Soc., Bombay, No. 8, New Series.*

ART. CXXVII.—*Topographical and Sanitary Report on the Station of Meean Meer.*

By DR. T. G. SCOT,
79th Highlanders.

"The cantonment of Meean Meer, in lat. $30^{\circ} 34'$ north, long. $74^{\circ} 4'$ east, is situated on an extensive plain, six miles to the east of Lahore.

"Meean Meer is computed to be 1500 feet above the sea-level, and is slightly higher than the city of Lahore. On this account, I believe, it was selected by Sir C. Napier as an eligible site for European barracks. The area within cantonment boundaries is thirteen square miles.

"The soil varies from a stiff clay, or loam, to a very light grey sand, beneath which is a bed of a kankār, resting on siliceous sand. There is a good deal of nitre in the soil. The alluvial deposit is of no great depth, and is decidedly sterile, but, with the aid of manure, is susceptible of considerable improvement. Water is abundant, but only obtainable by sinking deep wells; in some localities the water is slightly brackish, but in the majority of wells it is pure and wholesome.

"The magnificent new canal, the central line of which is 247 miles in length, with three branches, amounting to 219 miles more, and which traverses the length of the 'Bāī Doāb,' is now nearly completed: it passes within a mile of the northern end of the cantonment.

"In the Punjab the climate is superior to that of Lower Bengal, or the North-West Provinces. In May, June, and July, the heat is intense; but this is in a great measure counterbalanced by the uniform dryness of the atmosphere, and the small amount of rain. No 'periodical rains' occur in this district, which seems to lie just beyond the limits of the monsoon.

"In winter the weather is cold; the temperature sometimes falls to within a degree or two of the freezing-point. The cold season commences about the end of October. November, December, and January are delightful months, and even so late as the end of March the mornings and evenings continue to be pleasantly cool.

"The climate is decidedly favourable to the maintenance of health, and the temperature is materially modified by the proximity of the Himalaya mountains, from the gorges of which powerful currents of cool air sweep over the plains, raising terrific dust-storms, which, though disagreeable at the time, have the effect of purifying the atmosphere and lowering the temperature.

"From want of a thermometer in the hospital I have not been able to keep a register of the temperature; but I find it recorded that the average temperature in 1857 was $73^{\circ} 4'$, the maximum 101° , the minimum 41° .

"The diseases common to the Punjab are fevers, liver complaints, and dysentery.

"Few trees ornament the station, but almost all the waste ground is covered with stunted, thorny shrubs and plants, which thrive in an arid soil.

"The points most essential for the conservancy of privies and urinaries, and which have been approved of and tested in practice at the Lahore Central Jail, are—

"1st. The absence of all masonry and pukka-work containing *lime or cement*.

"2nd. The prohibition of all drains, pipes or conduits, whether closed or open, leading either in or out of the privies or urinaries.

"3rd. The prohibition of water being used to flush the ground or flooring, all of which must be kept perfectly dry.

"4th. The urinary and privy to be under one roof.

"5th. No lime to be used, as the uric acid has a strong affinity for lime, and the compound formed by the reaction of the acid on the lime is that which produces the overpowering ammoniacal fœtor so much complained of. Slabs of stone or tiles, as they require to be joined by cement of some kind, are quite as objectionable as pukka-work. All metal tubes, tiles, drains, etc., are bad.

"6th. No cesspools."

Dr. Scot concludes his excellent Report with the recognition of the dry system of conservancy as the only one adapted for India.

"Since writing the foregoing detail of sanitary arrangements and improvements proposed, a special committee have sent in a Report, recommending the immediate adoption for European barracks of sanitary arrangements similar to those in use in the Central Jail, Lahore; and I understand that the Executive Engineer has received instructions to do away with the cesspools attached to privies and urinaries, and to alter a privy belonging to each regiment to the dry principle plan, as an experiment. I have delayed sending in this Report in hopes of being able to add that the altering of every privy and urinary was authorized, and actually being carried out, as the shutting-up of cesspools, and the disuse of water in urinaries, cannot now be looked upon as an experiment. We have the satisfaction of knowing, however, that the dry system is now recognized as the only one adapted for efficient conservancy."—*Army Med. Report*, 1861.

ART. CXXVIII.—*The Punjab Sanitary Report.*

In October, 1861, Dr. Hathaway, Inspector-General of Prisons (Punjab), was appointed Special Sanitary Commissioner, to inspect and report upon the conservancy arrangements in the principal military stations in the Punjab, and from the valuable and elaborate Report which he presented to Government we make a very few extracts, commending the original document to the careful study of all who take an interest in the important subjects discussed.

Extracts.

"3.—As my Report is desired to be based on personal inspection, I have omitted all theoretical discussion as to the cause of disease, and have confined myself to the practical consideration of the subject of conservancy; first pointing out what are the great rules which nature and experience have laid down for our guidance, and then showing how and where these rules are disregarded, with the remedial measures that suggest themselves for the abolition of existing evils.

"7.—The three essentials to life are air, food, and water, and, as a universal rule, according to their purity or impurity, so will either health or disease exist.

"8.—In no quarter of the globe, probably, is the essential value of pure air so patent as in this country, whether we consider the morbid influences resulting from malaria, the deadly exhalations from stagnant water and decomposing animal or vegetable refuse-matter, or the poisoned state of an atmosphere that has been contaminated by the products of expiration from the human body.

"9.—If air were more constantly considered as a fluid, capable of being fouled and dirtied in the same way as water is, we should be more inclined to pay attention to the natural sense of smell, which, like all our senses, has been wisely given us, not merely for our gratification and enjoyment, but as a valuable guide by which we are capable of detecting danger and avoiding it.

"10.—Has any one ever entered a barrack (in the middle of the night) in which fifty or a hundred soldiers were sleeping, without being sickened by the close and unwholesome effluvia that pervades the whole building? And yet there is no reason that it should be so; there is no reason why the atmosphere during the night should be permitted to become more loaded and offensive than in the day. But, certain it is that free ventilation is most unmistakably called for; not mere cubic or superficial space, but a greater ingress of fresh air, and a more rapid egress of that which has become impure and unwholesome.

"11.—And this is, I think, one main reason why the European officer enjoys a greater degree of health than the private, and rallies sooner when attacked with sickness; for if pure air be necessary to health when well, it becomes doubly so in a state of disease, when the secretions from the skin, and exhalations from the lungs, become not only injurious, but highly poisonous.

"15.—Inspecting officers and regimental-surgeons should also be called upon to make occasional visits to the barracks before the men quit them of a morning, and a standing order should be given regarding the keeping the windows or ventilators

open. In many barracks that I have visited, I find no regulation on this subject enforced. In most cases the means for opening them were not available, from the ropes being defective, and a single string, if required, has to form the subject of an official application to the barrack department. All kinds of excuses were offered; the possible access of heat, dust, and rain were readily brought forward, but no thought seemed to be taken of the positive danger incurred by breathing an atmosphere, which at night is poisoned with the effluvia and exhalations given off from the bodies and lungs of sleeping men.

"The Dry System of Conservancy.

"25.—The latrines used in the Punjab jails are perfectly free from any effluvia whatever, and the essential points in which they differ from the majority of those constructed for military use are as follows:—

"A. The absence of all masonry or pucca work containing lime cement.

"B. The prohibition of all cesspools or reservoirs, and all drains or pipes, whether closed or open, leading in or out of the latrine or urinary.

"C. The prohibition of water being used to flush the ground or flooring, which is to be kept perfectly dry.

"D. The flooring being of earth (instead of pucca masonry or stone), on which dry sand to the depth of four inches over a layer of well-rammed clay is strewed, and the portable vessels for the reception of both fluid and solid refuse-matter being deposited on the sand.

"E. The immediate removal of all refuse matter from the latrine itself, and the careful burial every evening in trenches dug for the purpose.

"F. The abolition of the practice of sprinkling powdered lime in the urinaries or latrines, or in any other spot.

"29. The superiority of the dry system, or, in other words, the total abolition of the use of water for flushing the urinaries, requires but ocular demonstration to convince the most sceptical or prejudiced.

In theory, the idea of a stream of water constantly flowing through the urinaries appears perfect; in practice, it is known to be a total failure, because the urine is passed above and below, and on the sides, while the water itself merely trickles along a small portion of the conduit; added to this, the water after flowing through the urinary becomes itself polluted, and has to be got rid of. It cannot be used to lay the dust or water the road, and hence expensive cesspools are dug to receive it, where it remains stagnating and offensive, or it occasionally bursts through the surface of the ground, in close proximity to the sleeping barracks, and even the wells which supply the troops with drinking-water. This has happened at Meean Meer more than once, as well as at Sealkote.

"Water and Personal Cleanliness.

"71.—With regard to water, although it is a point of vast import-

Water. | ance, yet on no subject have I found such great indifference and ignorance, in the course of my tour of inspection. While the natives of this country are most particular in selecting the water they drink from the best and cleanest source, so much so, that in every station there are one or two wells, which, *par excellence*, have gained a fixed reputation, and to which every one resorts, the British soldier appears to be perfectly careless on the matter, so that he gets enough; and the quantity consumed in the course of the twenty-four hours, during the hot weather, is enormous.

"72.—In very few stations is the water filtered, even for the sick Boiled and filtered in the | in hospital, and I failed to ascertain that Punjab jails. | it was done regularly anywhere, except at Peshawur. In the jails of the Punjab it is now a standing regulation, that, during four months in the year, viz. from June to September, all water used for drinking purposes is to be not only filtered, but boiled, and I believe it to be a measure of great prophylactic value.

"73.—When it is considered that the wells in this country are all Impurity of water, and its | open, that the water is close to the surface, that leaves of trees, dust and dirt effect. | of every description, and frequently insects and reptiles may be seen floating on the surface; that the water is carried in bags made of the skins of animals very imperfectly tanned, and used promiscuously either for drawing stagnant water out of a ditch or tank, or that required for drinking purposes; that there is no method of cleaning this bag, or even of opening it to examine how dirty it may be inside; that in nearly every water-jar (where special care is not taken to prevent it) will be found organic vegetable and animal matter, frequently in the shape of worms and animalcula visible to the naked eye, is it wonderful that health gives way to disease, and that fever, diarrhœa, and dysentery so abound?

"79.—Personal cleanliness is not enforced amongst the troops so much as it should be, especially in a Personal cleanliness. | tropical climate. If we consider that every adult exhales by the skin and lungs, in the course of twenty-four hours, three pints of moisture "loaded with organic matter ready to enter into putrefaction," that in disease it is both greater in quantity, and still more noxious in quality, and that it is necessarily absorbed by the clothes and bedding, can we wonder on being told, by those who have paid the subject most attention, that this noxious matter, if not removed, is again absorbed into the body by the action of the cuticle, and that poisoning by the skin is as certain and deadly in its effects as poisoning by the mouth?

"80.—The main point in all sanitary suggestions, in my opinion, Secretions of the human | is constantly to insist upon the fact, until we fully realize the idea and have it body noxious to health. | vividly impressed upon our memory, that the secretions of the human body are in themselves noxious, and that our duty is to assist nature in her efforts to remove the ele-

ments of danger, instead of concentrating and intensifying the poison. This is the real object in bathing, in wearing clean clothes, in exposing bedding to the atmosphere, in cleansing the floors and ventilating the rooms of our dwellings, and establishing a proper system for carrying away and burying all excrementitious matter.

“Cholera.

“13.—It is a remarkable fact that, at more than one station in the Punjab where cholera appeared last year, the first case occurred in the hospital; and this alone would show the absolute necessity, not only of removing the excreta at once, but of abolishing as much as possible the use of close-stools, and especially the custom of keeping them in the verandas and corner rooms.

“64.—In India, the Parsees are known to suffer less in proportion than any other classes; they occupy good houses, are very cleanly in their habits and dress, and consume wholesome food. In comparing different bodies of European soldiers, the Artillery have fewer casualties than any other troops; they are seldom over-crowded, get a variety of food from their own private mess fund, their duties are not trying, and they have much less night duty or exposure to weather.

“65. Amongst the individuals composing a European regiment, and who occupy the same building and hence breathe the same atmosphere, the statistical tables that have been compiled from the official returns furnished by the Medical Board for a period of several years, show conclusively that the smallest ratio of deaths from cholera occurs amongst the children, the next amongst the women, and the highest amongst the men. The difference may be easily accounted for, on the broad laws that have been everywhere recognized as effecting a predisposition to the disease. The men are exposed to fatigue and weather, are more careless of their health, and have their constitutions more or less weakened by intemperance and other vices. The women are of temperate habits, have no duties which cause them to be exposed to the sun, rain, or night-air, never sleep on the ground or out of doors, and have more resources in their family duties to occupy their minds; they do not smoke, and do not therefore require an inordinate quantity of water to satisfy their thirst. The children have lighter clothing, which is oftener changed, and are bathed frequently, while their diet is more simple, and yet more varied; they partake sparingly of water, suffer no exposure, and are not depressed by fear on the outbreak of an epidemic.

“455.—Not only does the case of the European officer present a most marked contrast to the private soldier, as regards immunity from disease and recovery when attacked, but the same result will be found to exist with other classes in the same regiment that approach the

soldier still nearer in his social position and daily circumstances of life.

"456.—Struck by the meagre information furnished in the usual Analysis of medical returns. | hospital returns, which aggregate all cases under the one comprehensive designation of 'rank and file,' and anxious to ascertain how far the particular occupation of any class in a regiment, with the collateral circumstances connected therewith, might tend to exempt its members from disease of an epidemic character, I suggested an analysis of many of the cholera returns of last year, according to a new form, and which I think well worthy of earnest consideration.

"457.—I find from the returns of regiments which suffered severely from cholera in different parts of the province, that the great bulk of cases occurred amongst the unmarried privates who had no special duty assigned them; while those of their comrades who were married, or who had any particular occupation to employ their time connected with the duties of the regiment, were much more exempt. The same result appears also both in the case of the commissioned and non-commissioned officers (with the exception of the sergeants of companies, whose duties were very severe). The servants, including even sweepers and hospital attendants, almost entirely escaped; while, on the other hand, the men of the band suffered very severely; and this has been remarked as a peculiar fact in several regiments, not only in this, but in former years also.

"458.—It will be at once seen, on looking at the following Table, Reasons assigned for the | in how many cases the circumstances of a particular class in the regiment differ widely from that of the ordinary private. Thus, the staff-sergeants, and those who occupy detached bungalows and the end-rooms of the barrack, or who sleep away from the barrack altogether, escape the over-crowding and poisoned atmosphere at night-time; while others, such as those employed at the mess or the officers' quarters, obtain a greater variety of food and better cooking. The majority are exempted from the fatigue and exposure of night duty; many escape parade altogether; and, lastly, all have some occupation which engages their mind throughout the day, and being, as it were, the subordinate staff of the regiment, they are careful to avoid intemperance and vice, or excesses of any kind, for fear of losing their appointments."

Dr. Hathaway is of opinion that life and health would be largely saved if a larger proportion of the private soldiers could be employed in special occupations or duties. He says:—

"462.—I believe that a single day passed in a barrack would con-

Illustration of the evils of | vince any one of the soundness of my want of occupation. | argument, and would lead to the object I have at heart being secured. At the time of the outbreak of cholera at Murree, in August, 1858, I used to visit the depot very often with Sir John Lawrence, and was so struck with the listless appearance of the men, and their total want

of occupation, that I no longer wondered at their succumbing to the disease in such numbers.

"463.—No one seemed to care about anything but how to get

<p>Details given.</p> <p>were alike unknown to, and unpractised by, the majority. They had no gardens; they did not walk out, or play at any game, but each man lay on his bed, either smoking or sleeping, until it was meal-time. They would then get up, eat a heavy meal of beef, washed down by a glass of grog, go to bed, smoke, sleep, and get up to eat again. In some cases I was assured that they ate meat three times during the twenty-four hours, and there was no variety even in that: the same monotonous dish of fried beef and onions appeared always on the table.</p>	<p>through the day, or to 'kill time' as it was termed. Exercise and occupation</p>
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"Venereal Diseases."

"89.—The subject naturally leads to the consideration of social

<p>Social vice a great source of disease.</p> <p>disease among the British troops in this country, and the greatest cause of their being predisposed to the attacks of cholera, fever, and dysentery, which the officer living in the same station, breathing the same atmosphere, and occupied in the same duties, finds himself exempt from.</p>	<p>vice, and it is this point which I have purposely reserved to the last, because I believe it to be the greatest source of</p>
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"90.—I am aware that the inquiry is one which is frequently

<p>Importance of the question.</p> <p>But the question is of vital importance. It affects the present as well as the future health of thousands; of the child unborn, the girl just married, and every rank and class of our soldiery, from the recruit recently arrived from England, to the broken-down and prematurely-old invalid, who is being sent out of the country incurably destroyed at an age when other men are in their prime of life.</p>	<p>evaded by writers on military sanitation, and passed over in the annual reports of medical officers, through false delicacy, or in the hopelessness of suggesting any practical remedy.</p>
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"91.—Not only does venereal disease keep a large proportion

<p>Its effect upon the whole Army.</p> <p>the constitution, cripples the bodily powers on the march or in the field, and predisposes to other diseases, especially rheumatism, which affection swells very largely the annual number invalidated and in hospital.</p>	<p>of the Army constantly in hospital, but the necessary treatment, combined with the ravages of the disease, undermines</p>
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"92.—The medical returns of the Principal Inspector-General's

<p>Evidence furnished by the medical returns.</p>	<p>office, and other authentic records, show the following to be the number of soldiers annually treated for syphilis alone:—</p>
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	Annual Admissions to strength.	Period of Observation.
Bengal Army . . .	17 per cent.	Average of 6 years 1850 to 1856
Madras Army . . .	22 „	do. 20 do. { 1829 to 1838 1842 to 1851
Bombay 1st Fusiliers	25 „	do. 8 do. 1846 to 1853

“93.—In 1861, the general return of the whole Bengal Army sub-

Loss of two entire regi-
ments throughout the year
by this disease.

mitted to the Commander-in-chief
showed that, in the month of August,
1734 men (equal to *two* whole regi-
ments), out of a strength of 40,731, or

51 per 1000, were treated for venereal affections in the European
hospitals during the month. This number proves how enormous
must be the aggregate in the whole year.

“94.—For forty years, viz. from 1797 to 1835, lock hospitals were

The benefits of Lock Hos-
pitals.

in existence in the three Presidencies,
one being established at every large
military station. They were abolished

in Bengal in 1830, and in Madras five years later; but, though
badly managed, being left almost entirely to native agency only,
the following statement,* prepared by Dr. Waring, from the returns
in the office of the Medical Board, shows how fearfully the disease
increased after their abolition, proving incontestably that they
must have been of real efficiency in checking the virulence of the
scourge.

“96.—During the last two years a lock hospital has been esta-

Results obtained at Meean
Meer.

blished at Lucknow and Lahore. The
working of the latter has been fully re-
ported upon by Dr. Ross, Surgeon to

Her Majesty's 21st Light Dragoons; the result at the end of the
year was, not only a decrease in the number of prostitutes of nearly
32 per cent., but a remarkable diminution of cases occurring
amongst the soldiers, while, at the same time the disease was
of a much milder nature. This last point is too much lost sight of.
It is the virulence of the infection that is most to be dreaded, and
which, in tropical climates and among an Asiatic population, has
always a tendency to be increased or intensified by the duration of
the disease.

“103.—Without opening up the question either of morality or ex-

Arguments in favour.

pediency, let us take the high and broad
ground of humanity as our gauge. If

the law prohibits the sale of noxious liquor in cantonments, why
should it not equally prevent a more deadly and subtle poison from
attacking the troops located there? If it provide leper hospitals
and lunatic asylums for one class of disease, and *compel* the removal

* The statement shows that the admissions more than doubled after the
abolition of Lock hospitals.

of those so affected for proper treatment and separation from the mass, why should it not act with equal decision and promptness in the case of those who are not only diseased themselves, but communicate the disease to others with a certainty and malignity that is unknown even in the most contagious maladies, and with such unerring rapidity, that it is increased a thousandfold within a brief period of time; while the future effects on the system are equally destructive, causing death, broken-down constitutions, and injury to the second generation by an hereditary taint being communicated to the offspring? The validity of the argument is admitted in the case of a person affected with smallpox, who is prevented by law from appearing in the public streets; why not, with equal firmness and justice, apply the same rule in dealing with a disease equally communicable?"

ART. CXXIX.—*Health in the Tropics, or Sanitary Art applied to Europeans in India.*

By W. J. MOORE,
Bombay Medical Service.

In a single portable volume Mr. Moore has grouped together the principal acknowledged facts in Tropical Hygiene, and presented us with a lucid summary of the opinions of the most recent writers on the subject. We can scarcely do more than indicate the several chapters, which are as follows :—

Introductory remarks—On the causes of zymotic disease—On malaria—Showing that in all ages sanitation has been required, and its neglect followed by disease—Showing that sanitation is more demanded in tropical climates than in any other—Showing that preventive means only will materially lessen tropical mortality—Showing that the onus of continued sickness, from preventible and mitigable sickness, must henceforth rest on those who neglect the spirit of the orders of Government, and do not attend to the recommendations of the specially educated sanitary officer. The sanitary condition of Indian stations—On hill sanatoria—on marine sanatoria—on the choice of stations in the plains—on clearing—on barracks—on hospitals—on conservancy—on water—on cholera—on the soldier's diet—on intemperance—on scurvy—on prophylactic medicine—on syphilis—on dress—on the employment of the spare hours of the European soldier in India—on camps and marching—on the dispatch of troops by sea—on European colonization in India—on the condition of the Anglo-Indian soldier's wife, widow, and children. Remarks on quarantine.

The chapters which strike us as of most interest are those on hill sanatoria, on cholera, on intemperance, and on dress. Mr. Moore's views are always moderate and judicious, and free from any dogmatism. We heartily commend his work, both for its excellence of

execution and utility of design ; for we believe that it will awaken and extend an interest in this all-important subject, not only among his professional brethren, but also among military officers in India.

ART. CXXX.—*The Dooley as a means of Conveyance for Sick and Wounded.*

Treating of gunshot wounds of the lower extremities, Dr. Williamson remarks, that the large number of cases (13) of compound comminuted fracture, in which the limb was saved among the wounded from India, may be mainly attributed to the dooley as a means of conveyance. At page 140 he says, "The advantage of the dooley over the best constructed ambulance for the conveyance of sick and wounded over rough roads during active military operations, is well shown in the result of these cases of compound comminuted fracture of the femur." He adds :—"Why should not Government enlist and organize in India a corps of trained dooley-bearers for service with our regiments in European wars?"

Further details on this subject will be found in the chapter on the "transportation of sick and wounded."—*Military Surgery, by Dr. Williamson.*

ART. CXXXI.—*Topographical and Sanitary Report on Subathoo (a Lower Himalayan Station).*

By DR. MUNRO,
Surgeon, 93rd Highlanders.

The station of Subathoo is situated on a small range of hills running nearly north and south, and apparently a continuation of the same range on which Dugshai stands. On either side, east or west, this ridge is enclosed by deep valleys, which commence beyond the north end of Subathoo, and run, in a semicircular sweep, to a short distance beyond Dugshai, where they appear to meet.

The Subathoo ridge slopes down on both sides into these valleys, and is intersected by many watercourses, which act as drains, conveying all surface-water into the valleys below.

The space occupied by the station does not exceed a square mile. At the southern extremity lie the barracks and hospitals ; in the centre is the parade-ground, surrounded by the bazaar, commissariat buildings, several other public buildings and private bungalows ; and at the north end are officers' bungalows and several private houses.

Every barrack, house, or building is situated either on the top of small eminences, or on spots excavated and levelled on the sides of the main ridge ; the only piece of naturally level ground being the common parade.

During my observation here the prevailing winds were westerly, and the mean temperature about 70°. At the autumn season of the year the heat is considerable during the day; the mornings, evenings, and nights, however, are cool and comfortable. Frequent thunderstorms occur, but generally confined to the higher mountain-ranges above the station. After the middle of April an unusual quantity of rain fell, but I have been unable to give the exact quantity, there being no pluviometer at the station.

The following describes, we fear, the condition of most hill-stations in respect of drainage :—

“There did not appear to be any regular system of drainage: the only made drain observed was one paved gutter, intended to carry surface water off the small parade in front of the south barracks.

In the rainy season, Subathoo is by no means exempt from fever; but it is of a very mild remittent form, and yields easily to treatment. Bowel complaints, both diarrhoea and dysentery, are not so prevalent, and the exemption from these appears to be owing to the equable temperature, the alternations of heat and cold being neither great nor sudden. The peculiar form of bowel complaint known in the country as ‘hill diarrhoea,’ does not seem to prevail at all; at least, we had not any cases of it during the season. Rheumatic affections also are uncommon, and when they do occur are slight.

I have no means of drawing any comparison between this and the other hill-stations; but, from what I hear, bowel complaints and rheumatic affections are more frequent and more intractable, when they do occur, at the latter than at Subathoo; indeed, we had several cases of the former sent here from other stations (Simla and Dughshai), and the patients rapidly derived benefit from our milder climate.”—*Army Med. Report*, 1861.

ART. CXXXII.—*The Sanitary Condition of Hill Stations, with Especial Reference to Mount Aboo.*

By DR. MOORE,

In Medical Charge, Aboo Sanitarium.

With Statistical Tables, compiled from the Aboo Sanitarium Hospital Records, and other Sources.

Dr. Moore states that, “the late ‘Report on the Extent and Nature of the Sanitary Establishments for European Troops in the Bengal, Madras, and Bombay Presidencies’ shows that, instead of three, upwards of thirty sanitary stations now exist, most of them situated on one or other of the mountain ranges.

“I propose in this paper making an attempt to prove that the advantages derivable from the climate of many Indian hill-stations are negated by the neglect of sanitation in such localities, that preventable or mitigable diseases are much more prevalent on mountain ranges than they should be; and that so long as this remains

the case, the majority of our Indian Hill Stations can only be regarded as 'retreats from intense heat during the hot months.'"

Then follows a view of a few of the advantages the world has derived from the adoption of sanitary measures. The statement that "there are scarcely any localities where, both on account of the peculiarities of the climate, and the particular conformation of the surface of the ground, sanitary regulations are more demanded than in Indian hill-stations; neither are there any sites where such requirements may be effectually carried out with greater facility"—is next illustrated by the author in the course of his remarks on malaria, and the decomposition of organic matters "*viâ sicca*, et *viâ humidâ*," and the fact is mentioned of cholera having already, in confirmation of Dr. Mackay's prophetic warning, made its appearance in the Neilgherries. Extracts follow from published reports, showing the present sanitary condition of some of the hill sanatoria, as Simla, Ootacamund, Nynsee Tal, Dugshai, Darjeeling, etc., and pointing out their defects, of which Mount Aboo equally partakes. Landour is lauded as a kind of model, and, in conclusion, suggestions are made as to the most efficient means of placing and maintaining the hill sanatoria in a fit sanitary condition.

The sanitary condition of Mount Aboo is next discussed at great length; and numerous tables with accompanying remarks on the comparative prevalence and mortality of all the chief diseases, during various lengthened periods, are given. The following extracts contain some points of much interest:—

"Broadly speaking, the climate of mountain ranges may be said to differ from that of the plains in having a mean temperature, some ten or twelve degrees cooler than the latter; in being above the range of the hot winds, and in the greater damp which exists during the monsoon season.

"In a cold climate such as England, where decomposition is retarded by the low atmospheric range, and by the frosts and cold of the winter season, the value of sanitary measures has been over and over again demonstrated.

"Under the action of a tropical sun decomposition goes on '*viâ sicca*,' and excepting in the confinement of sewers and cesspools, where the same process does not take place, the products of such decomposition are by no means so injurious as those which result from decay '*viâ humidâ*.' Indeed, as Mr. Low states (Medico-Historical Narrative of the B. Company, Madras Engineers, 1857-8), under the full glare of a tropical sun the '*bodies of animals dry up like mummies, no decomposition taking place.*'

"Hence we find that both the cold of a temperate clime and the intense heat of a tropical sun, are made by a merciful Providence subservient to the health of man. When however, man, for his own convenience, ascends the mountains of tropical and semi-tropical regions, he finds that such preventives of disease do not obtain with equal force. He finds that there is neither the cold of the temperate region, nor the intense heat of the equatorial zones retarding the progress of decomposition, or the preparations of disease, to nearly the same extent which exists in other localities.

"The public however are not aware, or rather perversely remain apathetic about the effects of diluted sewer-emanations, or of tainted atmosphere arising from putrefying organic matter. Such emanations will not only destroy life immediately, but, as Dr. Letheby states, will, when mixed with common air, cause asphyxia and narcotism: in smaller quantities will induce nausea, delirium, and general insensibility; and in still further dilution cause general prostration of vital powers; failure of appetite; *diarrhœa of a chronic character; exhaustion, and low fever.* The latter, let it be remarked, are the very symptoms of *hill diarrhœa.*"

"The history of the Mahammurree, or Indian Plague, which formerly ravaged the Himalayas, from the Snowy Range downwards, affords an example of what will arise from defective sanitation and hygiene on Indian mountain-ranges, and also a striking instance of the success of preventive measures in arresting the progress of epidemic disease."

Here is a picture of hill sanitation!

"All the sanitary defects which have been noticed as existing at other places, are present on Mount Aboo. Holes and pits abound in the station. Marshy spots radiate from the centre to any extent. Drainage is almost unknown. Deciduous vegetation arises and decays, with but little check on its progress: there is no one endowed with magisterial powers resident during the whole year; *and there is not, nor ever has been, a single public scavenger employed for the station!*"

"Public latrines also are much required. In consequence of their absence the natives use the ravines and bushes as their temples of Cloaca, and the refuse of the bazaars accumulates somewhere in the immediate neighbourhood. Until latterly also every house had its dunghill attached, but these having been made the subject of complaint have now generally been removed.

"The establishment of a thorough system of sanitation in hill stations is sufficiently easy. Let a couple of hundred prisoners from one of the crowded jails on the plains, with a few sepoy as a guard, be brought up the hill: let them first hut themselves, and afterwards set to work, cleaning away vegetation, making drains, building bunds to tanks, enlarging roads, etc. etc. Afterwards let a tax be levied *by authority* on each landlord or tenant—exempting of course the military on duty, and officers present on sick certificate. Let the proceeds of this tax be spent in keeping in repair what the prisoners have effected, and in the maintenance of a public conservancy and clearing establishment. Let the medical, as (by Regulations for the Medical Officers of the Army, par. 22, p. 681) is now the case in all cantonments in the plains, be the *ex-officio* sanitary officer, with certain well-defined powers. Let some such plan as this be carried out, and our hill stations will then be sanatoria all the year round, instead of being, as many of them now are, simply refuges from heat during the hot months of the year."

Referring to the prevalence of malarious fevers at Mount Aboo, Dr. Moore says:—

"Ponder these facts as we may, we cannot help admitting that

the hill climate of Mount Aboo, in its present neglected condition, is not only not curative of, but is not preservative against, primary invasions of ague, in those who have been cured, or in those who have never suffered from the disease in their lives before! Fevers are less mortal, it is true, than on the plains, but their frequency interferes, or indeed negatives the restorative powers of the climate, and neutralizes to a great extent the advantages of elevation: coolness of temperature of air, and water; purity of the latter, and freedom of the former from the scorching winds."

Dr. Moore ends his laborious and useful inquiries in the following terms:—

"The conclusions which may be drawn from the foregoing, appear to be those which it was stated would be attempted to be proved:

"That preventible, or mitigable disease, is more prevalent on mountain ranges than it should be.

"That the natural advantages of the climate are negated by such prevalence of disease.

"That such disease may be removed or mitigated by sanitary arrangements.

"That until such arrangements are carried out, the most we can expect from hill sanatoria is a refuge from intense heat during the hot months of the year."—*Trans. Med. and Phys. Soc., Bombay, No. 8, New Series.*

ART. CXXXIII.—*Notes and Remarks on the Medical Topography of Sanauer and the Mountains around the Simla Sanitaria.*

By W. W. IRELAND, M.D.,

Late Assistant-Surgeon, H.M. Bengal Army.

"In my nearly two years' residence on the top of a mountain above 6000 feet high, the question often occurred to me, whether the human organism was in any degree affected by the absolute elevation? Calling to mind that the pressure of the atmosphere is so much diminished by the ascent, that water boils 13° lower, one can conceive there may also be some change in the condition of the fluids of the body, capable of affecting vital action, as is certainly the case above four miles' elevation in the atmosphere. In the healthy state, up to the height of 10,000 feet, I failed to observe any effects which could not be assigned to the great difference of temperature. The animals and plants of a temperate climate thrive here; and neither Europeans nor natives, as a general rule, suffered in any way by an abrupt elevation from the plains."

After noticing some observations of Majer, that elevation of a place above the sea has an effect in raising the rate of mortality during the first year of life, Dr. Ireland continues:—

"About a mile from Kussouli is the hill of Sanauer, on which

stands the Lawrence Asylum, founded for the benefit of the children of European soldiers. The hill is about 6000 feet high, composed, as mentioned in my paper of July last, of mica schist, the mica in small fine grains. There are some beds of tuff, and here and there veins of felspar, but no traces of lime. The top of the hill is covered with pine-trees. The temperature is a little warmer than at Kussouli, from which it is separated by a deep ravine. It is on the second range of hills, about twelve miles from the plains by the winding hill-roads. The arrangements and food are good; the children appear healthy and contented. The whole institution is under the guidance of a principal, the Rev. Mr. Parker, whose name deserves to be associated with that of its great founder in the early history of this most useful foundation. The statistics of the Lawrence Asylum may help us to come to an opinion on the often debated question, whether a European colony could retain its standard of health on the Himalayas.

"I have the statistics of eleven years, from its foundation in 1847 to 1859. This institution now includes the children both of its original foundation and of the lower orphan asylum, removed in 1856 from the plains. The amount of sickness has been naturally larger in the children of the latter asylum, which the medical officer attributes 'to the want of constitutional tone to resist infantile diseases, which are more virulent in the hills than in the plains.' This may be thought some confirmation of the observations of Majer. The asylum has been visited by epidemics, a severe one of whooping-cough, and one of measles; and in 1857 by cholera. There were thirty-five cases of cholera and twelve deaths. It may be here noticed, that cholera has been proved to ascend above 6000 feet. It was at Kussouli in 1845. It is not common in the hills. Mountain chains, in a sanitary point of view, may be considered as barriers to the further spread of epidemics and contagious diseases, as has been noticed in the mountains of Thuringia, which have checked the advance of whooping-cough from Northern Germany. The disease could only spread by creeping round the flanks of the chain of hills. In like manner, the Himalayas have often saved Thibet from the visitations of cholera, as the great chain of the Alleghanies saved the Atlantic States of North America in 1848 from its advancing march up the Mississippi.

"The average of sick in the Lawrence Asylum, during the two disastrous years, amounted in 1856 to 8 per cent., and in 1857 to 6 per cent. The average for the eight years from 1847 to 1855, both included, was about 4.5 per cent. Influenza is said to prevail annually, but it does not appear to present very well-marked symptoms. The most singular fact, however, in the medical history of the little community, is the great prevalence of ophthalmia. . . .

"After diligent inquiry, I was unable to find in the healthy state, either amongst the children of the Lawrence Asylum, or in the hill population in general, any especial tendency to the diseases which experience has proved to be aggravated by an ascent from the plains.

"I have already adverted to the great frequency of diarrhoea in the Simla group of sanatoria; it is the most common disease among

the children of Sanauer. Fixing their eyes upon such facts, some medical writers have hurried to the conclusion that this tendency to diarrhoea is the natural result of the great elevation attained by our sanatoria, an opinion endorsed by an eminent Indian pathologist. Hence it has been proposed that we ought to seek less lofty sites for new sanatoria, a proposal which would lead us into very grave practical errors. By availing himself of the medical reports, and the not very accessible literature of the subject, Dr. Norman Chevers has given us a most valuable outline of the medical history of the Indian hill-stations, from which it is apparent that such conclusions are based upon a very narrow foundation of facts. Indeed, the higher hill-stations are almost entirely free from endemic diarrhoea, *e. g.* Darjeling (8008 feet), Murree (7300), Landour (6786), Nynee Tal (6800); 1300 feet below Nynee Tal, at Almora, diarrhoea is prevalent. To find a sanitarium free from diarrhoea, we need not, then, avoid a great elevation; and to obtain one beyond the reach of malaria, in the Himalayas at least, we must take an elevation of from 7000 to 8000 feet, unless we can obtain a hill site not surrounded by a belt of jungle, nor by close narrow valleys, exhaling miasmata for the invalids above. If the reader will reflect upon the known relation between a high temperature and the production of malaria, and a low temperature and its disappearance, he will be disposed to admit that it is only in the higher and colder flights of air one can look for an atmosphere free from the malarious poison.

"The paramount indication in treating miasmatic fever is, if possible, to place the patient out of all reach of further malaria, for with him a trace of it, which would never affect a healthy individual, will cause a return of the paroxysms. Such a sanitarium ought to be carefully chosen, and guarded by all possible precautions known to be available. At the same time, it would most likely be too cold for invalids suffering from other disorders of tropical climates, who could recover quite as well at a lower elevation. A sanitarium ought, then, to be double; one station at an elevation of from 4000 to 5000 feet, under an experienced physician, who might select the cases requiring a colder climate, and send them up to a higher station, between 7000 and 8000 feet, whence they could descend in the winter to the lower and more temperate stations. These considerations are confirmed by personal observations in the Himalayan range. As the valleys become higher and the climate colder, ague becomes less and less frequent among the hill people.

"The total number of deaths in the first ten years of the Lawrence Military Asylum was 40; and, calculating the average number of children at 203, the 40 deaths give a percentage of 1.97 per annum. In 1850, during the ten months reported on, there were 391 children in the institution, and only 1 death. The ages of the children ran from three years to sixteen.

"If one calls to mind that these are children who have passed through the dangerous nurture which brings to an untimely end such a large proportion of soldiers' children in India, and that they enjoy at Sanauer advantages which the offspring of settlers would not share, he will be disposed to think the figures not very encoura-

ging. It is difficult to find a similar institution at home, where children are admitted at all ages. Dr. Balfour gives 9·7 per 1000 on an average of ten years, and, after some important dietary improvement, 4·9 per 1000 on an average of 8½ years, as the mean mortality of the boys of the Royal Military Asylum, Chelsea.

"But, granting that European colonists could exist and perpetuate their race on the breezy hilltops, they must descend into the hot, close malaria-haunted valleys, to obtain the means of living. The great objection, however, is, that the Himalayas are already over-peopled; from Peshawur to Sikkim there is a large, frugal, laborious, active, striving population, pressed between the snowy range, which they cannot cross, and the torrid plains into which they cannot descend to labour; for such has been the effect of long residence in a more temperate climate. All the ledges of ground that occur here and there amongst these steep hills and narrow ravines are already occupied.

"One thing that strikes the observer with surprise, is the hardihood which even natives of the plains, resident in our hill stations, show in enduring the cold. In Kussouli, they will stand out the winter, without any apparent detriment to their health, on half the amount of clothing, fuel, and carboniferous food, necessary to an Englishman. I have seen their little children running about in the snow almost naked, or, at most, with a thin cotton dress over their bodies. The black pigment of their epidermis, which saves them from sudden cooling in their own tropical climate, is no doubt also useful in retaining the bodily heat at low temperatures. These people, be it remembered, are natives of Upper India and the Punjab; the inhabitants of the coast are much less vigorous, and accustomed to a more uniformly warm and more enfeebling climate."—*Edin. Med. Journal*, Jan. 1863.

ART. CXXXIV.—*General Health of the Station of Mussoorie during 1861.*

By T. FARQUHAR, M.D.,
Bengal Army.

Mussoorie is the oldest and favourite hill-sanitarium of the North-West Provinces of India, and we have in this Report by Dr. Farquhar a very detailed account of it, geographical, physical, and topographical; this is followed by remarks on its sanitary condition, and the prevailing diseases, from which we make some extracts, as being of general interest.

"*Trees.*—The principal trees in and about the station are the oak, the fir, and the flowering rhododendron. Fruit-trees are becoming abundant, as apricots, walnuts, peaches, cherries, apples, and mulberries; raspberries grow wild, and the strawberry flourishes."

The following is strong evidence of the temperate character of the climate.

"*Dogs*.—English dogs are sent here in numbers, to spend the hot months, and, strange enough, their pups, born in the hills, are less likely to degenerate into the long-nosed mongrels, that are so often the progeny of good imported dogs in the plains."

The conservancy of Mussoorie is quite as defective as that of all our hill stations. Dr. Farquhar remarks:—

"For the conservancy of the place, strange to say, there are no arrangements. At one or two points the stink from decomposing animal matter is offensive even on the road. The houses are, however, usually so far apart, and the slope of the hill so perpendicular, that with the occasional showers which occur all the year round, the filth is in a great measure removed."

Health of children.

"The good health of the children at the schools in the hills here, is a most gratifying and remarkable fact. They are subject to attacks of diarrhoea, but in only one instance have I seen it run into a chronic form of the complaint. The first school was established by Mr. Mackinnon, and continued for eighteen years. During that time, out of 1500 boys, *three* were lost by death. The same good health attends the schools still, especially Mr. Maddock's, and the girls' school."

Barracks.

Dr. Farquhar is of opinion that this is a deeply important question, even in the hills. He states that the huge Naperian barrack has been found out to be a great mistake, physically, and cannot be good for the men morally. In large rooms the delicate men suffer from the extreme cold of the winter, and the chilly damp of the rains.

Another interesting and deeply important consideration in regard to these large barrack-rooms, is the facilities they afford for the spread of epidemic disease. In outbreaks of cholera, "the means of prevention most successful, viz. insulation, is proof to most minds that in these large barracks and latrines consists our greatest danger. "Insulation from the affected," continues Dr. Farquhar, "saved us in Mussoorie, I believe, this last year, from an outbreak of cholera. The separate compounds where only about twenty Europeans and natives lived together, have been favourable to the non-spreading of whatever contagion did come up the hill."

In respect of special diseases, as influenced by the hill climate, we make the following extracts:—

"Many of the enlargements of spleen and liver that came up to the hills became less or disappeared altogether. With one or two exceptions the malaria taint wore out considerably, if not altogether, in those who came up early in the season. The change of complexion on this occurring was very marked,—the jaundice sallowness left the face and eyes, and the *splenetic expression* gave way to a full eye and cheerful, plump face.

"All this gives the surest proof that could possibly be afforded, of the comparatively slight malarious character of these hills.

"There were thirteen cases of remittent fever, but no deaths.

"Diarrhoea is the second in order, as far as the number attacked were concerned, though doubtless first in importance, as the disease

so prevalent in, and its characteristics peculiar to, hill stations. There were 118 admissions under this head, and 1 death.

"It has been remarked, in the increasing heights of hills, rising above malarious tracts, that the poison of malaria gives rise at the lower altitudes to intermittent fever, and, further up, to diarrhœa.

"This observation is, though in a different way, strongly borne out by the tables of admissions of ague and diarrhœa here last year. From them it appears that in June and July, when malaria was feebly or only to a certain extent developed in the hills, diarrhœa prevailed only to a comparatively great extent, while there was little fever. Again, in August and September, when malaria was more fully developed, diarrhœa disappeared comparatively, and fever prevailed. The suddenness of the change, and the one disease apparently taking the place of the other, while cases of the two continued to occur at the same time, mark strongly the evident connection between them.

"The symptoms of the hill diarrhœa were as follows:—There was no feeling of sickness or illness, usually, with the beginning of the looseness of the bowels. Frequent copious discharges of light-coloured, watery, but still feculent matter took place usually in the morning, three or four times, and continued two or three hours during the day. These were followed by a sense of relief and lightness; but, if allowed to go on, pain and griping followed, with a feeling of weakness. Dyspeptic sensations and distended state of the stomach, with flatulent eructations, were also complained of; but for days after the attack began, some patients could go about and attend to duties or amusements. The effect of this neglect I have, however, seen to be, in some instances, an attack of dysentery, and in one or two cases, symptoms like cholera. The secretion of bile seemed to be interrupted, or so largely diluted with fluid from the surface of the intestines, that it appeared from the very light colour of the motions to be scanty.

"That nothing was seriously the matter at the commencement of each attack, was shown by the simplicity of the remedies that checked the diarrhœa, as well as by the absence of any constitutional derangement. . . .

"A mustard-poultice applied for a quarter of an hour or twenty minutes over the whole of the abdomen, was followed by immediate relief of all griping and uneasy sensations, and was of great assistance in checking the diarrhœa.

"In some cases, as in children, I found an ipecacuan emetic, followed by a grain or two of Dover's powder, to be of immediate and permanent service.

"I did not observe that the eating or abstaining from vegetables or any particular food had anything to do with the coming on of this complaint. I did, however, see the benefit of good, well-cooked food, in the comparative immunity from attacks in those officers who lived in the club; while in the hotel, where they had constant occasion to find fault with the food, they suffered much from diarrhœa.

"Old residents in the hills are very familiar with this diarrhœa,

and know that if the discharge is checked at once by a simple acid mixture, they and their children are none the worse of it.

"Exceptional cases do, however, occur, but the principal mischief I have seen is from allowing the weakening discharge to go on unchecked. Repeated attacks are followed by an anæmic or scorbutic state of the blood, which when fully developed is quite beyond the influence of diet and medicine; a complete change of air, and a sea voyage, seem alone able to restore the blood to its normal state. . . .

"The hill men do not suffer from this diarrhœa, nor do our servants from the plains, to a noticeable extent; so that it cannot be any epidemic influence, but a cause acting on unacclimatized constitutions.

Malaria. | "From what we see in the hills, of these four diseases,—intermittent fever, remittent fever, diarrhœa, and dysentery,—we are led to the conclusion that they are the effect of one and the same poison, malaria, in various forms of dilution.

"Remittent fever is almost always caught at the foot of the hills, or in the Khuds—the half valleys, half ravines, that separate one hill from another; and malaria that causes it, is evolved most abundantly towards the end of the rains.

"It would appear that all the miasma which is produced on the steaming sides of those tropical hills, being heavier than the ordinary air, pours down into the khuds. We can well fancy how a man breathing this concentrated poison for ever so short a time, would be liable to suffer from malarious disease in its severest form; and this is what we too frequently see. In a mild attack, when the patient is recovering, we see sometimes this remittent fever passing into intermittent; and in a case before alluded to under remittent fever, we see a neglected intermittent passing into a remittent form.

"Again, we have shown how diarrhœa in the hills is the effect of a weaker amount of malarious poison than that which produces intermittent fever; and it was frequently the case that a neglected diarrhœa passed into dysentery, and dysentery was frequently followed by diarrhœa.

"Though exposed to the causes of these four diseases in the hills, the European has far greater health and strength there (at least in Mussoorie) than in the plains, where these malarious diseases also are. This depends principally on the following causes:—

"I. There is the cool, bracing air, which imparts strength to the European, and enables him to resist the causes of disease that do exist.

"II. The greater cold in the hills, checks to a great extent the generation of malaria.

"III. The rain that falls in the hills cannot lodge, as in the plains, forming those marshes, the drying up of which is attended with the evolution of such noxious quantities of malarious poison.

"IV. Though last, not least, there is the flowing, down the side of the hills, of the malaria generated there, its subsidence into the

khuds, and escape into the plains at the foot of the hills."—*Indian Annals, Med. Sci., No. 16.*

ART. CXXXV.—*Intermediate Sanitaria.*

Instead of sending the sick from China direct to England, a sanitarium was established for them at the Cape of Good Hope, and on this subject Inspector-General Dr. Muir writes:—

"It may be questioned, however, whether a true sanitarium can exist anywhere out of England. Man is a complex being, and in sickness the mind must be ministered to as well as the body. Tell a patient worn down by exhausting disease or tropical heat, that he will be sent next week to the cool and healthy climate of the Cape, and he will turn on his pillow with indifference; but tell him that he is to go home, and the magic sound of the word '*home*,' even if he has not a near relative in the world, will make him quiver with joy."

Dr. Williamson was placed in charge of this sanitarium for invalids from China in 1860, and says* that he entirely agrees with Dr. Muir's opinion, "viz. that all sanitariums at the Cape or elsewhere will never be of advantage to the Army,—I mean those halfway places between India and China. Australia has also been proposed as a sanitarium; but however good the climate may be, it appears to me that such a scheme would never be of the slightest good to sick or wounded soldiers from any of our colonies. I do not however, allude to the hill stations in India as sanitariums, and others of our colonies, which are generally of very great advantage. At the Cape I found it almost impossible to keep the really sick in good spirits and contentment, even when they had every comfort, accommodation, and a good climate for the cure of disease; also that the convalescents out of hospital were very irregular, and caused great trouble to the commanding officer. According to my experience, when an officer or soldier is really sick on foreign service, send him *home at once*, and not to an *intermediate sanitarium*, for the best sanitarium is *home*. '*England*' is a grand word for a sick soldier on foreign service."

We believe that these views are gaining ground, and other authorities might be quoted in favour of them: thus, in the evidence of Surgeon-Major Alexander Grant, as given in the Report on the Sanitary State of the Army in India, we find it stated that for the sick, the only change he recommends is either to the hills or to England, by the long sea-voyage round the Cape.

ART. CXXXVI.—*Report of the Commissioners appointed to inquire into the Sanitary State of the Army in India.*

We may fittingly conclude the Hygiene of the East India Sta-

* '*Military Surgery*,' page 248.

tion, by placing on record the "Recapitulation" of this Report, and the "Recommendations" which are the results of the long and laborious inquiries of the Royal Commission which closed its proceedings in May, 1863.

Recapitulation.

"Our inquiry has shown—

"1. That by far the larger proportion of the mortality and inefficiency in the Indian Army has arisen from endemic diseases, and notably from fevers, diarrhœa, dysentery, cholera, and from diseases of the liver.

"2. That the predisposition to these diseases is in part attributable to malaria, in conjunction with extremes of temperature, moisture, and variability.

"3. But that there are other causes of a very active kind in India connected with stations, barracks, hospitals, and the habits of the men, of the same nature as those which are known in colder climates to occasion attacks of these very diseases, from which the Indian Army suffers so severely.

"In examining into these causes, we find that the stations generally have been selected without reference to health, and mainly from accidental circumstances, or for political and military reasons. Many of them are situated in low, damp, unhealthy positions, deficient in means of natural drainage, or on river banks, close to unwholesome native cities or towns.

"The towns and bazaars in the vicinity of lines are in the worst possible sanitary state, undrained, unpaved, badly cleansed, often teeming with offensive and dangerous nuisances; with tanks, pools, and badly-made surface gutters, containing filth and foul water; the area overcrowded with houses, put up without order or regularity; the external ventilation obstructed, and the houses overcrowded with people; no public latrines, and every spare plot of ground covered with filth in consequence; no water-supply, except what is obtained from bad shallow wells and unwholesome or doubtful tanks. These towns and bazaars are the earliest seats of epidemics, especially of cholera, before their ravages extend to the European troops in the vicinity.

"None of the stations have any subsoil drainage; and there are no other means of removing the rainfall except surface gutters. The ground about the lines is often broken up in pits and hollows, filled with stagnant water, or it is traversed by unwholesome ravines or nullahs. In certain states of the weather and wind nuisance is experienced in the lines from these causes, and from the foul state of neighbouring native dwellings. Many of the older stations are irregularly built; and the buildings are arranged so as to interfere with each other's ventilation.

"Both barracks and hospitals are built at or close to the level of the ground, without any thorough-draught between the floors and the ground. And the men, both in barrack rooms and sick wards, are exposed to damp and malaria from this cause, as well as from want of drainage. The ventilation is generally imperfect; and from the arrangement of doors and windows, men are exposed to hurtful

draughts. Many of the rooms are too high, and as a consequence there is much surface overcrowding, both in barracks and hospitals, although with large cubic space. In a number of instances both the space and area per bed are much too small.

"Barracks and hospitals have frequently no glazed windows, and only wooden shutters. Both barrack-rooms and sick-wards are, as a rule, dark.

"There are often four, or even six, rows of beds between the opposite doors or windows, increasing greatly the already existing difficulty of ventilation and exposing the inmates to foul air.

"The greater proportion of the force is lodged in barracks in such large numbers per room as to be very injurious to health; many of these rooms being several hundreds of feet in length, and some of them containing from a quarter to half of a regiment each!

"Water sources have been, with one or two exceptions, selected without analysis, although it is always hazardous to omit this precaution. The supply is taken from shallow wells and tanks, both of which are very liable to pollution. In a few cases, the water is derived from rivers. It is drawn by dipping, and carried in skins, thereby increasing its impurity. No precautions are taken for purifying drinking-water, and the whole arrangement results in a supply of water (for drinking and culinary purposes) of a bad or doubtful quality, and such as would be rejected in any improved sanitary district in this country. This unsatisfactory condition of the water-supply is one of the cardinal defects at Indian stations.

"Ablution and bath accommodation is often very deficient, and sometimes there is none. Very often there are no baths, and where baths exist there are not enough.

"Means of cooking are primitive and imperfect, hardly suitable for permanent barracks, although the cooking is considered sufficiently varied.

"Privies and urinals are generally of a bad or defective construction. The contents are removed by hand, often producing great nuisance. No drainage for either privies, ablution-rooms, or cook-houses: the foul water is received into cesspits or carried away by hand.

"Hospitals are constructed on the same general plan as barracks. They have no proper ablution or bath accommodation; no water-closets, only open privies situated at a distance; no drainage, no water-supply, except what is drawn and carried by hand labour. The bedsteads are often of wood, instead of iron, and mattresses and pillows of various materials, instead of hair, as they ought to be.

"No trained attendants are provided for the sick.

"The soldier has a complete ration of good quality; but the ration is not varied to provide against the effects of the soldier's sedentary habits; and no difference is made for the cold and hot season. For the hot season the ration contains too much animal food and too little vegetable. Mutton is not issued often enough.

"Flannel underclothing would be very advantageous, and a better system of supplying boots for troops is required.

"The use of spirituous liquors is highly detrimental to the sol-

dier's health in India, and is one of the chief personal habits which injure him physically and morally. Abstinence from spirits has always been attended by greatly improved health, even under circumstances otherwise unfavourable, and by diminution of crime. The only advantage of the issue of spirits in canteens is stated to be that it prevents the soldier from obtaining more unwholesome spirits in the bazaar. The moderate use of malt liquor or light wines is much less injurious to health than spirits.

"Connected with habits of intemperance and want of occupation, is the prevalence of syphilis, a disease which occasions a large amount of inefficiency and invaliding.

"Means of recreation are few, of exercise none, of instruction limited. The soldier's habits are sedentary, where they ought to be active. He is led into vice and intemperance. He has no means of occupying his time profitably. He complains of the weary sameness and ennui of his life. This, together with his diet, and allowance of spirit and malt liquor, is bad for his health—physical as well as moral health.

"Making every allowance for the influence of climate, which, however, is altogether secondary, except as increasing the effect of removable causes of disease, the whole tenor of the evidence proves that the bad sanitary conditions enumerated, together with unfavourable habits as to diet, intemperance, and want of occupation, on the part of the men, are causes sufficient to account for a large part of the sickness, mortality, and invaliding occasioned by those diseases from which the Army in India mainly suffers.

"The arrangements for the prevention of disease are either non-existent or most deficient. There are no proper sanitary authorities in towns, no trained officers of health in any town or cantonment, and no means whereby the experience obtained in dealing with sanitary questions at home can be rendered available for India. Until recently, no means on the part of medical officers of receiving education in military hygiene and sanitary knowledge existed; there was no recognition of the sanitary element in the army medical service. At present there are no means of bringing trained sanitary knowledge or experience to bear on the selection of sites for stations, or on the laying out of stations or bazaars with the requisite sanitary works, or on the planning or construction of barracks and hospitals on sanitary principles.

"Under the new medical regulations, medical officers are empowered to make representations regarding removable causes of disease to commanding officers, which will so far meet the requirements of regiments; but otherwise there is neither order nor system in sanitary administration.

"Hill stations are proposed as a means of being able at once to remove the troops from the influence of climate, malaria, and sanitary defects of stations and barracks into a healthy region. The evidence proves that these stations are useful chiefly for prevention, but not always for cure of disease; that they are suitable for children, and for healthy or ailing men, but not for unhealthy regiments, especially those suffering from bowel complaints; that about a third

part of the troops might be located on hill stations, or on other high and healthy positions in rotation, with advantage to health; that although the number of stations in malarious regions should be diminished as far as practicable, and the troops removed to healthier localities, there are certain strategical points (yet undecided) which must be held, whether healthy or unhealthy, and the force on the hills must be considered as a reserve for the purposes of health.

"Although several excellent hill-stations are in use, they are not sufficiently convenient for many stations; and an increased number is required. Very careful examination and trial of the climates of new sites should be undertaken. The evidence further shows that there has been great neglect of sanitary measures at existing hill-stations, giving rise to serious disease and mortality.

"Stations on the plains and slopes of India, up to 1500 feet, and on the raised coasts of the sea, are comparatively salubrious. They only require adequate sanitary arrangements.

"Stations on low inundated lands are hotbeds of malaria.

"Native lines are laid out, and huts built, without sufficient reference to health.

"There is no drainage, clearing, or levelling, and little attention to cleanliness or ventilation.

"Native hospitals are almost altogether wanting in means of personal cleanliness or bathing, in drainage or water-supply, in everything, in short, except medicine. The medical officer has no control over the patient's diet. There are no trained attendants on the sick. The evidence shows that, by management and conciliation, much might be done to improve the sanitary condition of native lines, as well as the state of native hospitals.

"We have, in the course of our inquiries, endeavoured to ascertain the probable excess or mortality in the Indian army, occasioned by the sanitary defects we have described, as well as the reduction of mortality, which would follow on the adoption of improvements in existing stations, combined with the use of hill stations, and the abandonment of as many unhealthy localities as may be practicable. The statistical evidence shows that the mortality varies from 11½ per cent. in the most unhealthy, to about 2 per cent. in the most healthy places, even in their present unimproved state. It has been estimated that the lowest of these rates, or 2 per cent. (double the rate of home stations since the introduction of sanitary improvements), may be taken as the possible mortality under improved sanitary conditions.

"The annual death-rate for the whole of India has hitherto been about 69 per 1000. The proposed European establishment is 73,000 men, and will, at the present rate of mortality, require 5037 recruits per annum to fill up the vacancies caused by death alone.

"A death-rate of 20 per 1000 would require only 1460 recruits per annum, so that the excess of mortality is 3570 lives per annum.

"Estimating the cost of recruiting, training, and landing men in India, at no more than £100 per man, the excess of mortality will be equivalent in cost to a tax of nearly £1000 per diem, irrespective of the cost of the extra sickness indicated by a high death-rate.

"A careful examination of the causes of disease, and of the character of the diseases prevalent at the more healthy stations, would lead us to hope eventually for a greater saving of life than we have here estimated. Causes of disease, such as exist at these stations, would, even at home, be sufficient to account for one-half of the 20 per 1000; and if the time should ever arrive when, under the influence of improved culture, drainage, and sanitary works, India should be freed from the local malaria which exists everywhere there now, as it once did in some form or other over Europe, we may cherish the hope of realizing what statistical inquiries appear to point to,—namely, that the natural death-rate in times of peace of men of the soldiers' ages in India, will be no more than 10 per 1000 per annum.

"But a reduction of mortality also indicates increased physical strength, and greater fitness for duty in the Army generally, as well as a smaller proportion of 'constantly sick' in hospital; and hence a greater effective numerical strength.

"Fewer recruits would be required to supply the losses from disease, a point of very great importance, in regard to which Sir A. Tulloch states that he very much questions whether, with the mortality-rate of the last forty years, it would be possible to keep up an army of 70,000 men in India. And he says that from what he knows of recruiting, this country would not be able to fill up the gaps occasioned by death, and at the same time supply the vacancies occasioned by invaliding, and by the return of time-expired men.

"Apart, therefore, from the question of humanity, the introduction of an efficient system of hygiene in India is of essential importance to the interests of the empire.

"The following recommendations are founded on the practical conclusions at which we have arrived:—

Recommendations.

"1. That no recruit be sent to India under twenty-one years of age, nor until he has completed his drill at home, and that recruits be sent direct from home to India, so as to land there early in November.

"2. That no spirits be issued to troops on board ship, except on the recommendation of the medical officer in charge.

"3. That the sale of spirits at canteens be discontinued, except in specific cases, on the recommendation of the medical officer, and only malt liquor or light wines allowed; that the sale of spirits in military bazaars be made illegal, and, as far as practicable, suppressed.

"4. That the ration be modified to suit the season; that flannel be introduced as under-clothing, and a better system of supplying boots introduced.

"5. That the means of instruction and recreation be extended to meet the requirements of each station; that covered sheds for exercise and gymnastics be provided, and that gymnastic exercises be made a parade; that libraries be improved, a better supply of

books and periodicals provided, together with reading-rooms, well lighted at night; that only coffee, tea, and other non-intoxicating drinks, be sold to the men at these rooms; that workshops be established, and also soldiers' gardens, in connection with the station, wherever practicable; that the proposal made by Sir C. Trevelyan, of selecting and educating soldiers of good character for subordinate offices in the administrative departments, be tried.

"6. That until the mortality be reduced, the period of service in India be limited to ten years.

"7. That provision be made for passing invalids at the port of embarkation without delay, and for their immediate shipment home.

"8. That works of drainage and water-supply be carried out at all stations; that all existing water-sources be subjected to analysis, and those rejected which contain matters injurious to health; that the present method of drawing and distributing water be discontinued wherever practicable; that all water used for drinking purposes be filtered, or otherwise purified.

"9. That all future barracks and hospitals be erected on raised basements, with the air circulating under the floors, and that, in all existing barracks and hospitals, the floors be raised as much as possible, and a free current of air allowed to pass beneath them.

"10. That all new barracks be constructed to hold no more than a quarter company in each building, or at most half a company in one building in two separate rooms, having no direct communication with each other; that hospitals be constructed in detached pavilions, containing no more than from twenty to twenty-four beds. that future barracks and hospitals be arranged *en échelon*, to receive the benefit of prevailing winds; and that detached cottages be erected for married soldiers.

"11. That barracks and hospitals be in future constructed with single verandas only; and for no more than two rows of beds between the opposite windows.

"12. That the cubic space per man in future barracks be from 1000 to 1500 feet, and the superficial area from 80 to 100 square feet, varying according to the airiness of the position: the same space and area to be allotted in existing barracks.

"13. That the beds be so arranged, with respect to windows, doors, and wall-spaces, as to ensure the benefit of free ventilation, without exposing the men to draughts; that, in existing barracks, where the space between the doors is too small to admit of this, precautions be taken to shelter the beds from draughts; that, in all future barracks, the wall-space be made sufficient to keep the beds at the least three feet apart, and at the same time out of the door-draught.

"14. That the ventilation of barracks and hospitals be sufficiently provided for independently of doors and windows.

"15. That in all cavalry barracks, saddlery rooms be provided, and saddles removed out of the barrack rooms.

"16. That all barracks and hospitals be provided with sufficient glazed window-space to light them, and that they be better lighted at night: gas to be introduced where practicable.

"17. That all barracks be provided with sufficient ablution and bath accommodation, with a constant water-supply; that drinking-fountains, supplied with filtered water, be provided.

"18. That barrack cook-houses be improved and better ventilated.

"19. That, wherever practicable, iron or earthenware water latrines, supplied with water, and drained to an outlet, be introduced instead of the present system; that, where this is impracticable, all cesspits be abolished, and metal or earthenware vessels, to be removed twice a day, substituted; that improved urinals, supplied with a jet for lavatory purposes, as well as with a free supply of water for the cleansing and drainage of the urinals, be provided.

"20. On the subject of venereal disease, and the means to be employed for its diminution, we refer to the suggestions made by us under that head in the body of the Report.

"21. That wherever there is a deficiency of married quarters, the same be supplied.

"22. That the cubic space in hospitals be fixed at 1500 feet and upwards, and the superficial area at from 100 to 120 and 130 square feet per bed, according to the healthiness of the position; and that the wall-space per bed be never less than eight feet. In existing hospitals the same space and area to be allowed.

"23. That every hospital be provided with a constant supply of pure filtered water, and with drainage.

"24. That every hospital be provided with ablution accommodation, with fixed basins, and with baths, having hot and cold water laid on, conveniently accessible from the wards.

"25. That, wherever practicable, water-closets, with drainage and water-supply, be introduced for hospital wards, and privies converted into water latrines.

"26. That the hospital diet tables in use at home stations be adopted in India as far as practicable, and the hospitals supplied with properly-trained cooks.

"27. That trained hospital attendants be introduced into all hospitals, and that female nurses, under the new medical regulations, be introduced into large general hospitals.

"28. That in future every regiment in India shall have an adequate number of hospital orderlies from its own ranks to provide personal attendance for the sick.

"29. That the number of general hospitals in India be increased by the organization of such hospitals, under the new medical regulations, at the largest European stations.

"30. That the strategical points of the country which must be occupied be now fixed, with special reference to reducing, as far as possible, the number of unhealthy stations to be occupied.

"31. That a sufficient number of hill stations, or of stations on elevated ground, be provided; and that a third part of the force be located on these stations in rotation.

"32. That the sanitary duties of regimental, garrison, and inspecting medical officers, prescribed in the new medical regulations of October 7, 1859, be applied or adapted to all stations in India; and

that properly trained army medical officers of health be appointed to this service at the larger stations.

"33. The Commission entirely approves of medical candidates being required to undergo the course of instruction, including military hygiene, at the Army Medical School, and are of opinion that practical training in sanitary science is of the greatest importance to the public service.

"34. Considering also the constant reference to sanitary subjects necessary in carrying out public works in India, they consider it requisite that every cadet of engineers should attend a course of sanitary instruction at Chatham.

"35. In order to the gradual introduction of sanitary improvements for barracks, hospitals, and stations, as well as in the seats of Government and throughout towns in proximity to military stations, they recommend the appointment of commissions of public health, one for each presidency, so constituted as to represent the various elements, civil, military, engineering, sanitary, and medical; to give advice and assistance in all matters relating to the public health, such as selection of new stations and the sanitary improvement of existing stations and bazaars; to examine new plans for barracks and hospitals; to advise on the laying out of stations and bazaars, the sanitary improvement of native towns, prevention and mitigation of epidemic diseases, and generally to exercise a constant oversight on the sanitary condition of the population, European and native; to report on the prevalence, causes, and means of preventing sickness and disease; and further, that administrative measures be adopted to give effect to the advice of the presidency commissions. That trained medical officers of health be appointed, to act in peace as in war, in connection with these commissions.

"36. That in order to render available for India the experience obtained in dealing with all classes of sanitary questions in England, two officers of the Indian Government be appointed in England to be associated with the War Office Commission for this special purpose: unless it should be thought preferable to appoint a similar commission specially for the Indian department.

"37. That a code of regulations, embodying the duties and adapted to the specialities of the Indian sanitary service, be drawn up and issued under authority.

"38. That the system of army medical statistics at present in use at home stations be extended to all stations in India.

"39. That a system of registering deaths and the causes of death be established in the large cities of India, and be gradually extended, so as to determine the effects of local causes on the mortality of the native as well as of the European population; the results to be tabulated and published annually by the Commissions."

The following is a list of the medical witnesses examined, alphabetically arranged:—

Dr. James Bird, late Phys.-Gen., Bombay; served 29 years in India.

Dr. McCosh, Staff-Surgeon; 25 years' service in India.

- Dr. Dempster, Insp.-Gen. of Hospitals. (Evidence in writing.)
 Dr. Eatwell, Principal, Calcutta Med. College. (Observations.)
 Dr. Hugh Falconer, F.R.S.; 25 years in India.
 Mr. Alexander Grant, F.R.C.S., 20 years in India; formerly personal surgeon to Lord Dalhousie.
 Mr. Julius Jeffreys, F.R.S., late Staff-Surgeon, Bengal Army; 12 years' service.
 Dr. MacLennan, F.R.C.P., late Phys.-Gen., Bombay Army; 31 years in India.
 Mr. T. Longmore, F.R.C.S., Dep. Insp.-Gen., late Sanitary Officer at Calcutta.
 Dr. W. C. Maclean, Dep. Insp.-Gen.; 22 years in Madras.
 Sir Ranald Martin, C.B., F.R.S., Physician to the Council of India; 22 years in Bengal.
 Dr. F. J. Mouat, F.R.C.S., Surgeon-Major, Bengal Army; 21 years in India.
 Dr. D. F. Rennie, Staff-Surgeon; served 6 years in Western Australia, also in China.
 Dr. Colvin Smith; served about 7 years in Madras, Bengal, and Burmah.
 Mr. A. Stuart, Dep. Insp.-Gen.; 17 years in India.
 Dr. Duncan Stewart; 30 years in India.
 Dr. R. D. Thompson, F.R.S., Officer of Health, Marylebone; formerly served in India and China.
 Dr. G. C. Wallich, Bengal Army, retired; 17 years in India.

ART. CXXXVII.—*Sundry Papers.*

We have noted the following Papers for the information of such of our readers as may desire to consult them :—

Remarks on Sanitary Subjects, with special reference to Mahableshwur. By Dep. Insp.-Gen. Grierson, Bombay Army.—*Trans. Med. and Phys. Soc., Bombay, No. 8, New Series.*

The Diet of the European Soldier in India, with the Effects of "Tobacco-smoking" upon the Animal Economy. By Arthur E. T. Longhurst, Assist.-Surgeon H.M. 13th Light Infantry. Calcutta, 1862, pp. 82.

Report of a Case of Hepatic Abscess bursting externally, and being connected with the Colon. By R. Domenichetti, M.D., Surg. 75th Regiment.—*Lancet, Feb. 7, 1863.*

Cases of Sudden Death from Fatty Degeneration of the Heart, with Observations. By John Shortt, M.D., Madras Army. (Dr. Shortt narrates 4 cases among natives which present some points of interest.)—*Madras Quar. Journ. Med. Sci., July, 1863.*

An Account of a Case in which the Menses were apparently substituted by Hæmorrhage from the Skin. Taken from a communication to the Grant College Medical Society. By Mr. A. P.

D'Andrade, Graduate of the College.—*Trans. Med. and Phys. Soc., Bombay, No. 8, New Series.*

Notes of Three Fatal Cases in which Fibrinous Coagula were found in the Heart. By Dr. Peet, Surgeon to the Jamsetjee Jeebhoy Hospital, etc.—*Ib.*

Report of a Case of Suicide by Hanging, attended with Rupture of the Superior Longitudinal Sinus. By Assistant-Surgeon S. W. Lithgow.—*Ib.*

On the Composition of the Liquid disengaged from Mud Volcanoes in Scind, etc. Extracted from Dr. Lalor's Paper read before the Medical and Physical Society, in August, 1862: the Analysis by Dr. Haines.—*Ib.*

On the Conversion of Calomel into Corrosive Sublimate by Ammoniacal Salts. By R. Haines, M.B., Bombay Army.—*Ib.*

On the Qualitative Analysis of Berberine. By J. E. Mayer, Prof. of Chemistry, Madras Medical College. (The conclusion is, that Berberine is not an alkaloid, though a strong base sufficiently powerful to neutralize strong acids, and to form, with them, salts of neutral and definite character.)—*Madras Quar. Journ. Med. Sci., Jan., 1863.*

Report of a Fatal Case of Snake-bite. By E. Emanuel, M.D., Bengal Med. Service.—*Med. Times and Gazette, May 2, 1863.*

Further Notes upon the Snakes of the Madras Presidency, with Descriptions of New Species. By Captain R. H. Beddome, Off.-Conservator of Forests.—*Madras Med. Journ., Jan., 1863.*

A Sketch of Malabar. By Ed. S. Cleveland, M.D., late Civil Surgeon, Malabar.

(This is an interesting and graphic sketch. The population of Malabar is 1,707,562, according to a census taken in 1862.

Calicut is the principal civil station in Malabar, and was the first spot occupied by European settlers in India. Calico is said to have been first manufactured here. The remains of old Dutch factories, walls, and batteries, may still be seen.

The mode of succession (the Nair law) is through the female line—a man's sister's children inheriting, not his own sons or children.

Case of Excision of the Superior Maxillary Bone (with engraving). By Dr. Sackville Sutherland, Bengal Med. Service.—*Ind. Annals of Med. Sci., No. 16.*

A Scheme for establishing a Uniform System of European Medical Practice among the Natives throughout the Madras Presidency, and for the more effectual Improvement of the Sanitary Condition of the People. By W. V. Nairs, Med. Subordinate, Madras Army. (The Editor publishes this paper "as an interesting exposition of the views of an educated native, who advocates the introduction of a European system of medicine, to be enforced on a plan essentially original in its character, and with extended native agency."—*Madras Quar. Journ. Med. Sci., Jan., 1863.*

"Last Voice from the Crimea."

In the early months of 1855, the British soldiers in the Crimea died, of disease alone—over and above those who were killed in battle or died of wounds—at the rate of 60 per cent. per annum. In the early months of 1856 (from January to May), the rate of mortality had been reduced to 1·15 per cent. per annum, on the whole force; while, amongst the sick, the rate was two-thirds only of what it is amongst troops on home service. Of these 60 per cent. of our soldiers who died in the worst months of 1855, out of every 100, 96 died of hospital diseases commonly classed as preventible. Of the 70,000 English soldiers who embarked for the East, we lost 22,000, of whom at least 14,000 might have been saved to the nation.

The contrast between the French and English armies is very remarkable. During the winter of 1854-55, the military administration of the French army was admirable. During the second year of the siege, however, the tables were turned; the hospital administration seemed to have broken down, the huts and hospitals being over-crowded and ill-ventilated. In the month of February, 1856, 20,000 sick were taken to the French hospitals, almost all of whom died. A few months later there were 73,422 men in hospital, out of a force of 142,391. Typhus fever was raging in their camps, while ours were free from the disease. On the whole, our allies lost 75,000 out of the 309,000 men who went to the war; and from Dr. Shrimpton's account it is evident that the average who died of preventible diseases was at least as large as it was amongst our troops. He dwells earnestly on the fact that "ventilation is the only preventive of hospital diseases," but does not seem to think that the French military authorities have yet recognized the fact.—*Mr. T. Hughes, in Macmillan's Mag., December, 1863.*

PART VII.

OBITUARY NOTICES.

*Dr. George Bellamy, R.N.*

DR. BELLAMY, who served with Nelson in some of his great actions, died in his native town, Plymouth, on the 11th October: he had nearly completed his ninetieth year. Dr. Bellamy entered the service in 1793. After participating in Lord Howe's victory, he was captured by five of the enemy's frigates off Brest, June 18, 1794. Restored to liberty, he joined the 'Garland,' 28. While attached next, from September, 1796, till 1800, to the 'Bellerophon,' 74, he was warmly engaged at the battle of the Nile. He saw other active service in the Mediterranean, the 'Bellerophon' having borne the flag of Lord Nelson. While in the 'Glory,' 98, he was a participator in Sir Robert Calder's action. He was placed on the retired list in 1817. Dr. Bellamy was a member of the Royal College of Physicians, and received a medal with two clasps for Lord Howe's action and the battle of the Nile.—*Lancet*, Oct. 17, 1863.

*Inspector-General James Borland.*

Dr. Borland was a native of Ayr, where he was born in 1774. Previous to the French revolutionary war, Dr. Borland was surgeon's mate of the 42nd Regiment, from which he was promoted to the Staff in 1793, and in that capacity served two campaigns in Flanders with the Army under the Duke of York. In 1794 he proceeded to the West Indies as surgeon to the 23rd Regiment, and the following year was appointed surgeon to the forces in St. Domingo, remaining in that island until its evacuation by the British troops in 1798. In 1799 he accompanied Sir Ralph Abercrombie to the Helder; and subsequent to the severe actions fought in North Holland, after the Duke of York assumed the command, he was selected by his Royal Highness to go with a flag of truce to headquarters of General Brune, commanding the French and Batavian forces, in order to negotiate an exchange of wounded prisoners, in

which he was successful. For this service he was appointed Deputy-Inspector, and attached to the Russian auxiliary army. For his care of the sick of those troops he received the thanks of the Emperor, with an invitation to enter the Imperial Service in the highest rank, which he declined. Dr. Borland was next employed at the Army Dépôt at Chatham, and at the Isle of Wight. In 1805 he was called to head-quarters in London, and in 1807 advanced to the rank of Inspector-General. During the expedition to the Scheldt in 1809, memorable for its disastrous results, Dr. Borland was sent at the head of a commission to inquire into the nature of the prevailing sickness at Walcheren. His associates were Sir Gilbert Blane and Dr. Lempiere, and their report was approved by Government. In 1810 he was appointed head of the medical department in the Mediterranean, in which position he remained for six years. He then returned to England, and did not resume active service; but, settling at Teddington, Middlesex, he devoted his energies to the welfare of those around him, being ever ready with heart and hand to comfort the afflicted and succour the distressed, both as a physician and a friend.—*Ayr Advertiser*.

Staff Surgeon-Major W. Braybroke.

Mr. William Braybroke, the son of Deputy Assistant Commissary-Gen. Braybroke, was born in 1816. His mother was a daughter of the celebrated sculptor Rossi, R.A., many of whose works adorn the interior of St. Paul's Cathedral. After receiving a liberal preliminary education, Mr. Braybroke began his professional education about thirty years ago. He first prosecuted his studies at St. Thomas's Hospital, but, in addition, attended Dr. Lee's obstetrical lectures at St. George's. In pursuing his curriculum he obtained several distinctions, being remarkable for intelligence and attention. By the advice of his uncle, Major-General Braybroke, who organized that highly efficient corps the Ceylon Rifles, the subject of this memoir entered the Army in June, 1843. He served successively in America, the Ionian Islands, China, Ceylon, and Malta; and was, seriatim, assistant-surgeon of the 30th and 97th Regiments, and then on the Staff. In 1853 he returned, invalided, from the East, and on his arrival in England was promoted to the surgeoncy of the 59th Regiment. From this corps he exchanged to the Staff, married the youngest daughter of the late Major Ebhart, and went to Malta in 1855. Thence he was driven home by a severe attack of pleuritis. He was appointed surgeon to the Military Train on its formation, and remained in that duty till he received from Dr. Gibson the post of Registrar of the Hospital at Woolwich. In this office he was for a short time interrupted by being called to the head-quarters of the Medical Department at Whitehall, in order to assist Dr. Graham Balfour in compiling the statistical returns of the army hospitals.

Mr. Braybroke, though not athletic, enjoyed average good health. Whilst doing his duty efficiently, and apparently quite well, he was

suddenly seized with apoplexy on the 23rd of October last, and died in five hours. His unexpected death occasioned sincere grief to the whole garrison at Woolwich, who have shown the greatest sympathy to his widow and orphan children.

Mr. Braybroke, as a practitioner, was prudent, judicious, and well-informed; his hospital was always a pattern of neatness and order; and his unvarying kindness and attention won the confidence, and even the affection, of both officers and men.

In his private relations, it is impossible in this short compass to do justice to the virtues of Mr. Braybroke. As a husband and father, he was unsurpassed; as a friend, faithful and generous: conscientious in the discharge of every duty, but fond of society, in which he was always affable and entertaining. The loss of this gentleman will be long felt by his colleagues and friends.—*Lancet*.

Surgeon-Major William Crozier, F.R.C.S.

We have had to lament the decease of one of our colleagues, Professor William Crozier, whose distinguished career terminated on board the Peninsular and Oriental Company's steamer Simla, on the 19th November last. Mr. Crozier was the first who obtained, under Professor Owen, the Studentship of Comparative Anatomy, in the Royal College of Surgeons of England. Having laboured there for three years, during which he enriched the college museum with a great number of preparations, he claimed, by privilege of his position, an appointment in the Bengal Army. In India he maintained that character as a comparative anatomist and laborious student of nature, of which he laid the foundation at home. In June, 1857, he succeeded Mr. Walker here in the conjoined duties of Professor of Physiology and Comparative Anatomy, and Curator of the College Museum. Mr. Crozier laboured among us, undeterred by the inroads of mortal disease, which, it would seem, were long apparent to every one but himself, for five years, acquiring among the students the character of an able and popular instructor, and among his brother professors that of a worthy gentleman and esteemed friend. Mr. Crozier served in the first Sikh war; medal. —*Annual Report of the Calcutta Med. College, Session 1862-63. By the Principal, Dr. Chevers.*

Surgeon-Major John Deas.

Dr. Deas, surgeon of the 2nd Light Cavalry, died at Neemuch, of chronic diarrhoea. He was the youngest surviving brother of Lord Deas, and a native of Falkland, Fifeshire. He received his education at the High School of Edinburgh. The 'Homeward Mail' says,—“Surgeon-Major Deas had seen much service, and received

the highest commendations of his superiors. He served in the naval expedition to the island of Karrack, in the Persian Gulf, in 1838; at the attempt by a large force of Arabs to retake Aden, at the end of that year; with the field force in Scinde and Afghanistan, from 1839 to 1842; again with the field force in Scinde in 1843, and as Brigade Staff-Surgeon at the first engagement at Hykulzye, under Major-General England; as Surgeon of the 3rd Cavalry, with the Persian Expeditionary Force in 1856-57; at the assault and capture of the Fort of Reshire, and subsequent surrender of Bushire, under Major-General Stulker, C.B.; as Field-Surgeon, 1st Division of the force, under Lieutenant-General Sir James Outram, G.C.B.; with the expedition to Borazjoon, the occupation of the enemy's entrenched camp, and during the night-attack by the enemy on the line of march; the action of Koosbah; at the bombardment and capture of the forts of Mohumrah (medal and clasp); with the Central India field force, under General Sir Hugh Rose; at the attack, siege, and capture of the Fort of Garakota; forcing of the Muddenpore Pass; the relief of Saugar; the siege and storm of Jhansi; the battle of Betwa; action of Koonch; battle of Galowlee; the capture of Calpee; the battle and capture of Gwalior; the battle of Gullallapore; pursuit and defeat of the rebels under Brigadier-General Sir R. Napier; and served against the rebels in the Jhansi and Jaloun districts during the monsoon of 1858.

Deputy Insp.-Gen. D. Grierson, M.D., Bombay Army, died at Poona, of Aneurism of the Aorta, 6th January.

The 'Bombay Saturday Review' says,—“The late Dr. Grierson was a man highly and honourably distinguished throughout his period of service in India. He arrived in India towards the close of 1832, and, including an interval of three years at home, passed upwards of thirty years in active public employment. After the usual service in the Indian Navy, Dr. Grierson performed regimental duty for several years, and subsequently held charge of the Lunatic Asylum, Bombay. But he was best-known and most highly esteemed as Staff-Surgeon, Kurrachee, from which post he was called last year to become surgeon of the European General Hospital, Bombay. He was uniformly during his career conspicuous for zeal in his profession, a zeal remarkably clear of everything like egotism or display; and hence he gained the respect, and a still kinder feeling of esteem, of his brother medical officers. Dr. Grierson had the pen of a ready writer, and several of his contributions, on strictly professional subjects, appear in the early volumes of the Transactions of the Medical and Physical Society; whilst the last-published number of the Society's Transactions is enriched by a very comprehensive article, entitled 'Special Considerations on the Health of European Troops.' The cause of vaccination in Scinde was also

assisted by him, in the publication of a little tract on Jenner's discovery.

"Dr. Grierson was esteemed as an eminently devout and humble Christian; his benevolence, in whatever mode he could exert it, was promptly and most unostentatiously manifested on all occasions. In Scinde especially, his memory will be held in grateful recollection, and perpetuated for the value of the eminent services he rendered; whilst his brother medical officers, we understand, propose to erect a tomb over his remains at Poona, to mark their estimation of his sterling worth."

Inspector-General John Gunning, C.B.

Mr. Gunning died on Sunday morning, at his house in the Rue du Colisée, Paris, in the ninetyeth year of his age. He was, as was observed in the memoir of Sir Benjamin Brodie, published in the Journal of November 15, 1862, "probably the only surviving pupil of John Hunter. He was in St. George's Hospital at the time of Hunter's death, and walked at the side of the sedan chair in which Hunter was conveyed to Leicester Square." In 1793, he was elected a member of the College of Surgeons; and in 1800 was elected surgeon to St. George's Hospital, which office he resigned in 1823. He was attached to the medical staff of the Duke of York's army so far back as 1792, and resumed active service on the outbreak of the Peninsular war: Sir Benjamin (then Mr.) Brodie doing duty for him at St. George's Hospital in his absence. He was also present at the battle of Waterloo, where he amputated Lord Raglan's arm. The 'Express,' in noticing his death, says:—"His house was a joyous rendezvous for his own countrymen, at which he delighted to mix with young people and promote their amusement. There was scarcely anything of the old man about him. His sight, hearing, memory—all his faculties, indeed—were perfect to the last; and his friends confidently predicted that he would live to a hundred. On New Year's Day he had a dinner-party; and cards for one of those little friendly dances which he loved to see were issued so lately as last week. An attack of bronchitis prevented him from receiving his friends on the day expected. His medical attendant, Dr. Davison, thought it serious; but he got better, and within the last two or three days was considered to be out of danger. On Sunday morning, however, he expired in his armchair without pain, and with scarcely any previous symptoms to denote an approaching end. His daughter, Mrs. Bagshawe (the wife of the Queen's Counsel), and two of his granddaughters, were with him at the time of his death."

Staff Assistant-Surgeon W. A. Hope, M.B.

The following account of the barbarous murder of this officer has been received from New Zealand:—

"On the 4th of May last, Dr. Hope was ordered to proceed in medical charge of a party of the 57th Regiment from Tataraimaka to the town of New Plymouth. The party consisted of Lieutenant Tragett, two sergeants, and six privates of the 57th Regiment. On their way, near the Oakura river, they were suddenly fired upon from the bush without a moment's notice. The fire came from about twenty yards' distance. Dr. Hope, who was on horseback, fell wounded, and at the same time the two sergeants dropped. The remainder of the party immediately extended, and returned fire; but had no sooner done so than they were surrounded by about thirty Maori natives. One of the privates managed to escape, though badly wounded, by hiding in the bush. The attack was witnessed by some men of the Commissariat Transport Corps, who were going towards Tataraimaka. These men hastened back to town, and gave the alarm. Some troops were immediately sent out, when the bodies of Dr. Hope and Lieutenant Tragett, together with those of the soldiers, except the private before alluded to, were found lying in the road. They had all received mortal gunshot wounds, and had been subsequently tomahawked and speared. Dr. Hope had a gunshot wound through the right shoulder; and on further examination, both lungs were found to have been penetrated. The ball lodged beneath the skin, near the spine, on the left side. He had also a tomahawk cut over the left side of the head, and a deep spear-wound through the face and upper jaw. Dr. Hope's horse was found with its leg broken by a musket ball.

"Dr. Hope was formerly himself in the 57th Regiment, and had only lately been appointed to the Staff. He entered the Army in May, 1858, and was an officer of high character in his department. He was the fourth son of the late R. Hope, Esq., J. P. of Urelands, in the county of Wicklow.—*Lancet*, Aug. 8.

Surgeon Sir John Spencer Login, M.D.

Sir John Login died suddenly at Felixstowe, in Suffolk, 18th October, 1863, aged 54. Assistant-surgeon, 1832; served with the Horse Artillery and in the Nizam's Army; appointed, in 1836, personal surgeon to Lord Metcalfe, Lieut.-Governor, North-Western Provinces; had medical charge of the Horse Artillery during the Affghan war, and afterwards of the British Mission at Herat; in 1840 served in the Commander-in-chief's Staff, and subsequently became Residency-surgeon at Lucknow; on the annexation of the Punjaub was appointed guardian and superintendent of the young Maharajah Dhuleep Singh, for which he was knighted in 1854. In 1858 he retired from the service and settled in London.

James Price, Esq., of Hereford.

Mr. Price was the professional Nestor of the county of Hereford, where for fifty-three years he had been in practice, after doing a fair life's work in active service, as prelude to the half-century of toil which only ended with his life. He passed his examination at Surgeons' Hall for the East India Company in 1803, and for two years did duty as a ship's surgeon; in 1806 he obtained his diploma, and was appointed assistant-surgeon to the Artillery; in 1808 he joined Sir John Moore's expedition, and accompanied the troops under this commander until the retreat on Corunna, and was present at the battle: *he received his medal for this engagement in 1849, forty years after the conclusion of peace.* He retired from the Army, and commenced practice in his native city, in 1816; he died with "armour on his back," continuing the practice of his profession until within a few days of his death. His gentle, kindly disposition endeared him to all, and he was highly respected by his fellow-townsmen and brother professionals.—*Lancet*, Oct. 31.

Assistant-Surgeon Schmitz.

"And here, as I have just referred, in passing, to the number of those who have entered the public service through the portals of this school, I must briefly advert to the losses which that comparatively small band has already sustained. Two have fallen victims to disease in India, Mr. Hope and Dr. Schmitz; these, I believe, comprise all the casualties up to the present time. Both these young officers attended during the first session. The news of the death of Dr. Schmitz only reached us a fortnight ago. His loss is regarded with peculiar regret by the professors; for he possessed distinguished abilities and learning, and was counted upon by them as one who would hereafter reflect lustre both upon the school and the department of which he became a member. He stood first in the competitive examination of his year in London, and first in the subsequent examination at Chatham, among those who composed the list of candidates for the Indian medical service. His acquirements were unusually deep in all the various branches of science appertaining to his profession, but were not limited to these; for, under the guidance and tuition of his father, the eminent Rector of the High School of Edinburgh, his range of knowledge had been extended into a wide acquaintance with general literature. He exerted himself conspicuously during the cholera epidemic which spread over part of Northern India soon after his arrival in the country; and while it was still actively raging, he kept up communication with this school respecting certain features which he noted in the rise and spread of the disease. There seems to be no doubt that the health of Dr. Schmitz was undermined at this time, and that his name may be fairly added to the long roll of medical officers

who have given up their lives to duty in our Indian possessions. Mr. Hope also attended the first session of the school, and gave every promise of being an excellent medical officer,—painstaking, careful, sensible, and in every respect a thorough gentleman. He fell a victim to an attack of cholera, and, as in the case of Dr. Schmitz, his premature decease has excited in the minds of all who knew him very sincere regret.”—*Prof. Longmore's Introd. Lecture, Army Med. School.*

Robert Knox, M.D., F.R.S.

Dr. Robert Knox, well known to Edinburgh medical students of thirty or forty years ago as a highly successful teacher of anatomy in that city, died of apoplexy at his residence in Hackney, on December 20, 1862. He was the son of Robert Knox, teacher of mathematics in the University of Edinburgh, and was born in that city on September 4, 1793. He claimed descent from that ancient and reputable Scottish family of Knox, of which John Knox, the energetic and turbulent Puritan reformer and iconoclast, was a member; and, we believe, was lineally descended from William, a brother of John. He was educated at the High School of Edinburgh, where he obtained the gold medal in 1810, and where his name still shines from a tablet on the wall, on which the names of the medallists are recorded. On leaving school, he studied medicine in the then illustrious Medical School of the University of Edinburgh, and, on taking his degree, entered the Army, and was appointed Staff-Assistant Surgeon, and attached to the 72nd Regiment. He soon after went to the Cape, and saw active service during the first Kafir war, in the years 1819–22. On his return he quitted the Army on half-pay, and began to teach anatomy in Surgeon's Square, Edinburgh, as successor to Dr. Barclay. This was the meridian period of Dr. Knox's life. As an anatomist and teacher he was unrivalled: his lecture-rooms were crowded; and he is said to have taught between five and six thousand pupils during the time of his professorship, amongst whom the names of William Fergusson, John Hughes Bennett, Richard Owen, John Goodsir, the late Professor Reid, and the late Director-General Alexander, shine conspicuously. In 1845 he left Edinburgh and came to London, where his intellectual activity found vent in a variety of occupations. He gave lectures on Ethnology at the principal scientific institutes in the kingdom; he attached himself to the Royal Free Hospital in Gray's Inn Lane, and was pathologist to the Cancer Hospital. He also employed himself extensively in literature; and in addition to a translation of Cloquet, which he had brought out some years before, and of Tiedemann on the Arteries, he translated Milne-Edwards's 'Manual of Zoology' (of which a second edition was on the eve of publication at the time of his death); he wrote a new 'Manual of Anatomy,' a particularly valuable book for the glimpses which it gave, short though they were, at a something in anatomy above and beyond the dry empiri-

cal enumeration of surfaces and processes; a 'Manual of Artistic Anatomy, for the use of Painters, Sculptors, and Amateurs;' a work entitled 'Great Artists and Great Anatomists;' and, lastly, his immortal book on 'Ethnology; or, the Races of Men.' But besides these greater works were many lesser memoirs scattered throughout the Transactions of various natural history societies, of which a paper on the "Affinities of the Trout and Salmon" attracted much attention. Dr. Knox was early married, and had six children, of whom one only survives him.—*Med. Times and Gazette.*

John Smith Soden, Esq.

Died at Bath, on the 19th of March, John Smith Soden, one of the oldest members of our profession, one of the founders of this Association, and one who leaves behind him an honoured and respected name.

Mr. Soden was born at Coventry on the 29th of March, 1780; a few days longer of life would have completed his eighty-third year. He was educated at the King Edward's Grammar School of his native city. He commenced his professional career under the tutelage of Mr. George Freer, a distinguished surgeon of the Birmingham General Hospital, with whom he resided five years. He then went to London, and became a pupil of St. George's Hospital, and attended lectures at the Hunterian School in Great Windmill Street. On March 20th, 1800, he became a member of the old Corporation of Surgeons, immediately before its elevation to the dignity of a College. In the same year he entered the medical service of the Army, and was appointed Assistant-Surgeon to the 79th Highlanders. He joined this regiment in June, and immediately afterwards embarked with it on that expedition which landed on the shores of Egypt on March 1st, in the year 1801.

Mr. Soden served throughout the whole of the Egyptian campaign, and was present with his regiment both at the landing and at the battle of Alexandria, on March 8th. He returned with the Army to England on the termination of the war; and then, his health having in some degree suffered, and influenced by the belief that the peace of Amiens would be permanent, he retired from the service, and settled in practice in his native city. He remained there a few years, and in 1812 established himself at Bath, where he continued to practise until 1845, when he retired from the active duties of his profession. For the last twelve years, Bath was again his residence. Within a year of his removal to Bath, he was appointed surgeon to the Eye Infirmary, then just established, and also to the City Dispensary. The latter appointment merged with the charity itself into the Bath United Hospital, in which Mr. Soden continued to fill the same office till his retirement from practice. His professional services were also given for many years to the Bath Penitentiary, with which charity he was connected from its foundation. After his retirement from active professional life,

he ever manifested the warmest interest in the support and success of these humane institutions."—*Brit. Med. Journ.*, April 11, 1863.

*Assistant-Surgeon W. J. Thomson, Civil Surgeon of
Gurgaon (near Delhi).*

This officer was not only well-read and conversant with his profession, but he was possessed of a powerful mind, which, by careful training, was stored with much valuable information on points of science, particularly in its application to practical art. He was a chemist, a geologist, and a botanist. For his scientific Reports on different parts of his district, he had more than once received the thanks of Government. Under his inspection and superintendence, a bath has been completed at the mineral spring of Sonah, for the treatment of sick European soldiers. As an amateur photographer, Dr. Thomson was very successful. His views of Delhi, and of the temples in Central India, are most interesting. He entered the service under competitive rules, taking a high place in the list of candidates. His early death is much to be deplored. In testimony of their regret, the inhabitants and native officials of the district in which he served, submitted a request to be allowed to follow his remains to the grave. Would that such a tribute were more common to European worth in India! In the present instance, we see how a conscientious man, in even a very small station, by limiting his ambition, and acting his part unselfishly, to the advantage of all immediately around him, may earn the esteem and gratitude of even the poorest villagers of India.—*Mofussilite*.

Surgeon-Major Allan Webb, M.D., F.R.C.S.

Dr. Webb entered the Bengal service in 1835, and after doing general duty for a short time, he was appointed personal surgeon to the late Bishop of Calcutta (Dr. Wilson), whom he accompanied in his various journeyings throughout India during seven years; and this connection was the origin of a warm friendship, which lasted throughout the life of the venerable prelate. Dr. Webb's next appointment was that of Assistant Garrison Surgeon, Fort William, and here he became connected with the Calcutta Medical College, in which for many years he held the Chair of Descriptive and Surgical Anatomy, being also one of the surgeons to the Hospital, and surgeon to La Martinière. In 1855, on the retirement of Dr. J. Jackson, Dr. Webb resigned his chair, and was appointed surgeon to the Native Hospital, and a Presidency surgeon,—responsible offices, which he held when compelled to leave Calcutta on account of ill-health. He came home by the overland route, and speedily succumbed to insidious abscess of the liver, on the 15th of Sep-

tember, at the age of fifty-five years, and in the twenty-seventh year of his service.

The subject of this notice was a man of great private worth and unwearied energy ; he excelled in drawing and modelling, and had a genuine taste for the fine arts ; his knowledge and experience of the diseases of India were extensive, and he has left his mark on the medical literature of the country in which he spent the best years of his life. To the Medical and Physical Society of Bengal he contributed several papers, and in 1845 we find him, as its Secretary, editing the 9th volume of its Transactions. In 1848 appeared the second and enlarged edition of his principal work, the '*Pathologica Indica* ; or, the Anatomy of Indian Diseases : based upon Morbid Specimens, from all parts of the Indian Empire, in the Museum of the Medical College ; illustrated by detailed Cases, and Comments, Physiological, Historical, and Practical.'

The reputation and usefulness of this work will be long acknowledged, for it is replete with research, and enriched with valuable information. Of the papers which he communicated to the '*Indian Annals of Medical Science*,' the most important is one on *Elephantiasis Orientalis* ; and as the practical results of his large experience as an operating surgeon, he lately gave to the profession a small volume, entitled '*Field-Notes for Surgical Operations ; or, Ready Rules for Operating*.' Dr. Webb had an extensive private practice, chiefly among the native gentry of Calcutta, whose confidence and esteem he had gained in a high degree. He had declined promotion, and was on the eve of retiring from the service when struck down in the midst of usefulness, and when future years of rest and home-happiness seemed opening before him. He has left a widow and large family to mourn his loss. His eldest son is a distinguished Fellow of University College, Oxford.

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